



06/18/13

Technical Report for

Aquaterra Technologies, Inc.

Sun-Marcus Hook Refinery, Philadelphia, PA

AOI-5

Accutest Job Number: JB37868

Sampling Date: 05/23/13

Report to:

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Total number of pages in report: 189



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

A handwritten signature of Nancy Cole.

**Nancy Cole
Laboratory Director**

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Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV

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Test results relate only to samples analyzed.

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Sample Summary

Aquaterra Technologies, Inc.

Job No: JB37868

Sun-Marcus Hook Refinery, Philadelphia, PA
Project No: AOI-5

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
JB37868-1	05/23/13	10:30 YG	05/23/13	SO	Soil	1 AOI-5_MW-458_4-6'_52313
JB37868-2	05/23/13	08:45 YG	05/23/13	SO	Soil	2 AOI-5_MW-455_1-2'_52313
JB37868-3	05/23/13	10:20 YG	05/23/13	SO	Soil	3 AOI-5_MW-455_10-11_052313

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Aquaterra Technologies, Inc.

Job No JB37868

Site: Sun-Marcus Hook Refinery, Philadelphia, PA

Report Date 6/18/2013 12:37:19 P

On 05/23/2013, 3 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 1.3 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB37868 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix: SO

Batch ID: VI7458

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB37502-3MS, JB37502-3MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Benzene, Isopropylbenzene are outside control limits. Outside control limits due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Benzene, Isopropylbenzene are outside control limits. Outside control limits due to matrix interference.
- Matrix Spike / Matrix Spike Duplicate Recovery(s) for 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Ethylbenzene, Methyl Tert Butyl Ether, Toluene, Xylene (total) are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- RPD(s) for MSD for 1,2,4-Trimethylbenzene are outside control limits for sample JB37502-3MSD. Outside control limits due to matrix interference.

Matrix: SO

Batch ID: VI7460

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB37849-4MS, JB37849-2DUP were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- RPD(s) for Duplicate for Ethylbenzene, Xylene (total) are outside control limits for sample JB37849-2DUP. High RPD due to low concentration of hit
- RPD(s) for Duplicate for Methyl Tert Butyl Ether are outside control limits for sample JB37849-2DUP. High RPD due to possible sample analyzed from different vials.

Extractables by GCMS By Method SW846 8270C

Matrix: SO

Batch ID: M:OP33467

- The data for SW846 8270C meets quality control requirements.
- JB37868-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37868-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37868-1: Analysis performed at Accutest Laboratories, Marlborough, MA.

Volatiles by GC By Method SW846 8011

Matrix: SO**Batch ID:** M:OP33357

- The data for SW846 8011 meets quality control requirements.
- JB37868-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37868-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37868-1: Analysis performed at Accutest Laboratories, Marlborough, MA.

Metals By Method SW846 6010C

Matrix: SO**Batch ID:** M:MP21100

- The data for SW846 6010C meets quality control requirements.
- JB37868-1 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37868-2 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37868-3 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix: SO**Batch ID:** M:GN43077

- The data for SM21 2540 B MOD. meets quality control requirements.
- JB37868-1 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37868-2 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB37868-3 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover



SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest New Jersey

Job No JB37868

Site: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Report Date 6/18/2013 11:58:52 AM

3 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 05/23/2013 and were received at Accutest on 05/23/2013 properly preserved, at 1.0 Deg. C and intact. These Samples received an Accutest job number of JB37868. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Extractables by GCMS By Method SW846 8270C

Matrix: SO

Batch ID: OP33467

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC21315-2MS, MC21315-2MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8011

Matrix: SO

Batch ID: OP33357

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB37622-1MS, JB37622-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix: SO

Batch ID: MP21100

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC21111-1MS, MC21111-1MSD, MC21111-1SDL were used as the QC samples for metals.

Wet Chemistry By Method SM21 2540 B MOD.

Matrix: SO

Batch ID: GN43077

- Sample(s) MC21316-34DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(JB37868).

Summary of Hits

Job Number: JB37868
 Account: Aquaterra Technologies, Inc.
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA
 Collected: 05/23/13

Lab Sample ID	Client Sample ID	Result/ Analyte	Qual	RL	MDL	Units	Method
JB37868-1	1 AOI-5_MW-458_4-6'_52313						
Lead ^a		6.9		0.98	0.17	mg/kg	SW846 6010C
JB37868-2	2 AOI-5_MW-455_1-2'_52313						
Benzo(g,h,i)perylene ^a		0.0350 J		0.13	0.012	mg/kg	SW846 8270C
Phenanthrene ^a		0.0221 J		0.13	0.017	mg/kg	SW846 8270C
Pyrene ^a		0.0221 J		0.13	0.015	mg/kg	SW846 8270C
Lead ^a		32.4		0.98	0.16	mg/kg	SW846 6010C
JB37868-3	3 AOI-5_MW-455_10-11_052313						
Benzene		0.0349		0.0010	0.00012	mg/kg	SW846 8260B
Toluene		0.0049		0.0010	0.00011	mg/kg	SW846 8260B
Ethylbenzene		0.0283		0.0010	0.00027	mg/kg	SW846 8260B
Xylene (total)		0.0605		0.0010	0.00014	mg/kg	SW846 8260B
Isopropylbenzene		0.0122		0.0051	0.000076	mg/kg	SW846 8260B
1,2,4-Trimethylbenzene		0.110		0.0051	0.00021	mg/kg	SW846 8260B
1,3,5-Trimethylbenzene		0.0434		0.0051	0.00016	mg/kg	SW846 8260B
Lead ^a		7.3		0.96	0.16	mg/kg	SW846 6010C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.



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Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

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Client Sample ID: 1 AOI-5_MW-458_4-6'_52313

Lab Sample ID: JB37868-1

Date Sampled: 05/23/13

Matrix: SO - Soil

Date Received: 05/23/13

Method: SW846 8260B

Percent Solids: 78.2

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I184633.D	1	05/25/13	SJM	n/a	n/a	VI7458
Run #2							

Initial Weight

Run #1 5.9 g

Run #2

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0011	0.00013	mg/kg	
108-88-3	Toluene	ND	0.0011	0.00011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0011	0.00029	mg/kg	
1330-20-7	Xylene (total)	ND	0.0011	0.00015	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0011	0.00025	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0011	0.00015	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0054	0.000081	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0054	0.00023	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0054	0.00017	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		65-131%
17060-07-0	1,2-Dichloroethane-D4	105%		70-121%
2037-26-5	Toluene-D8	103%		80-128%
460-00-4	4-Bromofluorobenzene	107%		67-131%

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID:	1 AOI-5_MW-458_4-6'_52313	Date Sampled:	05/23/13
Lab Sample ID:	JB37868-1	Date Received:	05/23/13
Matrix:	SO - Soil	Percent Solids:	78.2
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	R31235.D	1	06/05/13	AMA	06/04/13	M:OP33467	M:MSR1136

Run #1	Initial Weight	Final Volume
Run #1	20.3 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.13	0.015	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.13	0.016	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.13	0.014	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.13	0.016	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.13	0.013	mg/kg	
218-01-9	Chrysene	ND	0.13	0.016	mg/kg	
86-73-7	Fluorene	ND	0.13	0.017	mg/kg	
91-20-3	Naphthalene	ND	0.13	0.020	mg/kg	
85-01-8	Phenanthrene	ND	0.13	0.017	mg/kg	
129-00-0	Pyrene	ND	0.13	0.015	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	51%		30-130%
321-60-8	2-Fluorobiphenyl	55%		30-130%
1718-51-0	Terphenyl-d14	66%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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Client Sample ID: 1 AOI-5_MW-458_4-6'_52313

Lab Sample ID: JB37868-1

Date Sampled: 05/23/13

Matrix: SO - Soil

Date Received: 05/23/13

Method: SW846 8011 SW846 3550B

Percent Solids: 78.2

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	YZ80880.D	1	05/30/13	AMA	05/28/13	M:OP33357	M:GYZ7155

	Initial Weight	Final Volume
Run #1	30.1 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0032	0.0012	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	145%		61-167%
460-00-4	Bromofluorobenzene (S)	101%		61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: 1 AOI-5_MW-458_4-6'_52313
Lab Sample ID: JB37868-1
Matrix: SO - Soil
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Date Sampled: 05/23/13
Date Received: 05/23/13
Percent Solids: 78.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	6.9	0.98	0.17	mg/kg	1	06/03/13	06/03/13	AMA SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: M:MA15695

(2) Prep QC Batch: M:MP21100

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

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Client Sample ID: 2 AOI-5_MW-455_1-2'_52313
Lab Sample ID: JB37868-2
Matrix: SO - Soil
Method: SW846 8260B
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Date Sampled: 05/23/13
 Date Received: 05/23/13
 Percent Solids: 78.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I184666.D	1	05/28/13	SJM	n/a	n/a	VI7460
Run #2							

Initial Weight
 Run #1 6.3 g
 Run #2

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00012	mg/kg	
108-88-3	Toluene	ND	0.0010	0.00011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0010	0.00027	mg/kg	
1330-20-7	Xylene (total)	ND	0.0010	0.00014	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00024	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00014	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0050	0.000075	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0050	0.00021	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0050	0.00016	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		65-131%
17060-07-0	1,2-Dichloroethane-D4	114%		70-121%
2037-26-5	Toluene-D8	112%		80-128%
460-00-4	4-Bromofluorobenzene	123%		67-131%

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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4.2
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Client Sample ID: 2 AOI-5_MW-455_1-2'_52313
Lab Sample ID: JB37868-2
Matrix: SO - Soil
Method: SW846 8270C SW846 3546
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Date Sampled: 05/23/13
Date Received: 05/23/13
Percent Solids: 78.7

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R31236.D	1	06/05/13	AMA	06/04/13	M:OP33467	M:MSR1136
Run #2							

Run #1	Initial Weight	Final Volume
Run #1	20.3 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.13	0.015	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.13	0.016	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.13	0.013	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.13	0.016	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.0350	0.13	0.012	mg/kg	J
218-01-9	Chrysene	ND	0.13	0.016	mg/kg	
86-73-7	Fluorene	ND	0.13	0.017	mg/kg	
91-20-3	Naphthalene	ND	0.13	0.020	mg/kg	
85-01-8	Phenanthrene	0.0221	0.13	0.017	mg/kg	J
129-00-0	Pyrene	0.0221	0.13	0.015	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	47%		30-130%
321-60-8	2-Fluorobiphenyl	57%		30-130%
1718-51-0	Terphenyl-d14	60%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

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4.2

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Client Sample ID: 2 AOI-5_MW-455_1-2'_52313
 Lab Sample ID: JB37868-2
 Matrix: SO - Soil
 Method: SW846 8011 SW846 3550B
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Date Sampled: 05/23/13

Date Received: 05/23/13

Percent Solids: 78.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ80881.D	1	05/30/13	AMA	05/28/13	M:OP33357	M:GYZ7155
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0031	0.0012	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	141%		61-167%		
460-00-4	Bromofluorobenzene (S)	98%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

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Client Sample ID: 2 AOI-5_MW-455_1-2'_52313
Lab Sample ID: JB37868-2
Matrix: SO - Soil
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

4.2
4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	32.4	0.98	0.16	mg/kg	1	06/03/13	06/03/13	AMA SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: M:MA15695

(2) Prep QC Batch: M:MP21100

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

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4.3
4

Client Sample ID: 3 AOI-5_MW-455_10-11_052313
Lab Sample ID: JB37868-3
Matrix: SO - Soil
Method: SW846 8260B
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Date Sampled: 05/23/13
Date Received: 05/23/13
Percent Solids: 85.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I184667.D	1	05/28/13	SJM	n/a	n/a	VI7460
Run #2							

	Initial Weight
Run #1	5.7 g
Run #2	

Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.0349	0.0010	0.00012	mg/kg	
108-88-3	Toluene	0.0049	0.0010	0.00011	mg/kg	
100-41-4	Ethylbenzene	0.0283	0.0010	0.00027	mg/kg	
1330-20-7	Xylene (total)	0.0605	0.0010	0.00014	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00024	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00014	mg/kg	
98-82-8	Isopropylbenzene	0.0122	0.0051	0.000076	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	0.110	0.0051	0.00021	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.0434	0.0051	0.00016	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		65-131%
17060-07-0	1,2-Dichloroethane-D4	112%		70-121%
2037-26-5	Toluene-D8	108%		80-128%
460-00-4	4-Bromofluorobenzene	123%		67-131%

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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4

Client Sample ID:	3 AOI-5_MW-455_10-11_052313	Date Sampled:	05/23/13
Lab Sample ID:	JB37868-3	Date Received:	05/23/13
Matrix:	SO - Soil	Percent Solids:	85.3
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	R31237.D	1	06/05/13	AMA	06/04/13	M:OP33467	M:MSR1136

Run #1	Initial Weight	Final Volume
Run #1	20.4 g	1.0 ml
Run #2		

BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.12	0.014	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.12	0.015	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.12	0.012	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.12	0.014	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.12	0.011	mg/kg	
218-01-9	Chrysene	ND	0.12	0.014	mg/kg	
86-73-7	Fluorene	ND	0.12	0.015	mg/kg	
91-20-3	Naphthalene	ND	0.12	0.018	mg/kg	
85-01-8	Phenanthrene	ND	0.12	0.016	mg/kg	
129-00-0	Pyrene	ND	0.12	0.014	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	48%		30-130%
321-60-8	2-Fluorobiphenyl	53%		30-130%
1718-51-0	Terphenyl-d14	63%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

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4.3
4

Client Sample ID:	3 AOI-5_MW-455_10-11_052313	Date Sampled:	05/23/13
Lab Sample ID:	JB37868-3	Date Received:	05/23/13
Matrix:	SO - Soil	Percent Solids:	85.3
Method:	SW846 8011 SW846 3550B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	YZ80882.D	1	05/30/13	AMA	05/28/13	M:OP33357	M:GYZ7155

Run #1	Initial Weight	Final Volume
Run #1	30.6 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0029	0.0011	mg/kg	
<hr/>						
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	144%		61-167%		
460-00-4	Bromofluorobenzene (S)	102%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: 3 AOI-5_MW-455_10-11_052313
Lab Sample ID: JB37868-3
Matrix: SO - Soil
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Date Sampled: 05/23/13
Date Received: 05/23/13
Percent Solids: 85.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	7.3	0.96	0.16	mg/kg	1	06/03/13	06/03/13	AMA SW846 6010C ¹	SW846 3050B ²

(1) Instrument QC Batch: M:MA15695

(2) Prep QC Batch: M:MP21100

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL



Misc. Forms

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Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



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CHAIN OF CUSTODY

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.acutest.com

JB37868: Chain of Custody
Page 1 of 3

JB37868

Constituents of Concern for Soil
Sunoco Philadelphia Refinery
Philadelphia, Pennsylvania

METALS	CAS No.	Method
Lead (total)	7439-92-1	SW846 6010B/C-LD

VOLATILE ORGANIC COMPOUNDS	CAS No.	Method
1,2-Dichloroethane	107-06-2	
1,2,4-Trimethylbenzene	95-63-6	
1,3,5-Trimethylbenzene	108-67-8	
Benzene	71-43-2	
Cumene	98-92-8	SW846 8260B/C-LD
Ethylbenzene	100-41-4	
Methyl tertiary butyl ether	1634-04-4	
Toluene	108-88-3	
Xylenes (total)	1330-20-7	
Ethylene dibromide	106-93-4	SW846 8011-LD

SEMI-VOLATILE ORGANIC COMPOUNDS	CAS No.	Method
Anthracene	120-12-7	
Benz(a)anthracene	56-55-3	
Benz (g,h,i) pentene	191-24-2	
Benzal(p)pyrene	50-32-8	
Benzofluoranthene	205-99-2	SW846 8270C/D-LD
Chrysene	218-01-9	
Fluorene	86-73-7	
Naphthalene **	91-20-3	
Phenanthrene	85-01-8	
Pyrene	129-00-0	

Notes:

As indicated by the "LD", all samples are to be analyzed using the lowest dilution possible.

*For tank investigations, Naphthalene is to be run using analytical method SW846 8260 and should be appropriately marked on the chain of custody.

JB37868: Chain of Custody

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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB37868

Client:

Project:

Date / Time Received: 5/23/2013

Delivery Method:

Airbill #'s:

Cooler Temps (Initial/Adjusted): #1: (1.3/1.3); 0

Cooler SecurityY or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler TemperatureY or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun | |
| 3. Cooler media: | Ice (Bag) | |
| 4. No. Coolers: | 1 | |

Quality Control_PreservatioY or N N/A

- | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Sample Integrity - DocumentationY or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - ConditionY or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - InstructionsY or N N/A

- | | | |
|---|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> |

Comments

Accutest Laboratories
V:732.329.02002235 US Highway 130
F: 732.329.3499Dayton, New Jersey
www.accutest.com**JB37868: Chain of Custody****Page 3 of 3**

Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB37868

Sun-Marcus Hook Refinery, Philadelphia, PA
Project No: AOI-5

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB37868-1	Collected: 23-MAY-13 10:30 By: YG		Received: 23-MAY-13	By: AS		
1 AOI-5_MW-458_4-6'_52313						
JB37868-1	SW846 8260B	25-MAY-13 06:25	SJM		V8260SL	
JB37868-1	SW846 8011	30-MAY-13 19:32	AMA	28-MAY-13 AMA	V8011EDB	
JB37868-1	SM21 2540 B MOD.	01-JUN-13	AMA		%SOL	
JB37868-1	SW846 6010C	03-JUN-13 22:51	AMA	03-JUN-13	AMA	PB
JB37868-1	SW846 8270C	05-JUN-13 20:44	AMA	04-JUN-13	AMA	B8270SL
JB37868-2	Collected: 23-MAY-13 08:45 By: YG		Received: 23-MAY-13	By: AS		
2 AOI-5_MW-455_1-2'_52313						
JB37868-2	SW846 8260B	28-MAY-13 18:35	SJM		V8260SL	
JB37868-2	SW846 8011	30-MAY-13 19:59	AMA	28-MAY-13 AMA	V8011EDB	
JB37868-2	SM21 2540 B MOD.	01-JUN-13	AMA		%SOL	
JB37868-2	SW846 6010C	03-JUN-13 22:55	AMA	03-JUN-13	AMA	PB
JB37868-2	SW846 8270C	05-JUN-13 21:07	AMA	04-JUN-13	AMA	B8270SL
JB37868-3	Collected: 23-MAY-13 10:20 By: YG		Received: 23-MAY-13	By: AS		
3 AOI-5_MW-455_10-11_052313						
JB37868-3	SW846 8260B	28-MAY-13 19:03	SJM		V8260SL	
JB37868-3	SW846 8011	30-MAY-13 20:26	AMA	28-MAY-13 AMA	V8011EDB	
JB37868-3	SM21 2540 B MOD.	01-JUN-13	AMA		%SOL	
JB37868-3	SW846 6010C	03-JUN-13 23:08	AMA	03-JUN-13	AMA	PB
JB37868-3	SW846 8270C	05-JUN-13 21:31	AMA	04-JUN-13	AMA	B8270SL

Accutest Internal Chain of Custody

Page 1 of 1

Job Number: JB37868
Account: AQTAW Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA
Received: 05/23/13

Sample/Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB37868-1.1	Secured Storage	Tony Esposito	05/24/13 13:08	Retrieve from Storage
JB37868-1.1	Tony Esposito		05/24/13 13:09	Subcontract
JB37868-1.2	Secured Storage	Tony Esposito	05/24/13 13:08	Retrieve from Storage
JB37868-1.2	Tony Esposito		05/24/13 13:09	Subcontract
JB37868-1.4	Secured Storage	Scott McGonigal	05/24/13 15:48	Retrieve from Storage
JB37868-1.4	Scott McGonigal	GCMSI	05/24/13 15:48	Load on Instrument
JB37868-1.4	GCMSI	Juntae Park	05/31/13 17:19	Unload from Instrument
JB37868-1.4	Juntae Park	Secured Storage	05/31/13 17:19	Return to Storage
JB37868-2.1	Secured Storage	Tony Esposito	05/24/13 13:08	Retrieve from Storage
JB37868-2.1	Tony Esposito		05/24/13 13:09	Subcontract
JB37868-2.2	Secured Storage	Tony Esposito	05/24/13 13:08	Retrieve from Storage
JB37868-2.2	Tony Esposito		05/24/13 13:09	Subcontract
JB37868-2.4	Secured Storage	Scott McGonigal	05/28/13 17:03	Retrieve from Storage
JB37868-2.4	Scott McGonigal	GCMSL	05/28/13 17:03	Load on Instrument
JB37868-3.1	Secured Storage	Tony Esposito	05/24/13 13:08	Retrieve from Storage
JB37868-3.1	Tony Esposito		05/24/13 13:09	Subcontract
JB37868-3.2	Secured Storage	Tony Esposito	05/24/13 13:08	Retrieve from Storage
JB37868-3.2	Tony Esposito		05/24/13 13:09	Subcontract
JB37868-3.4	Secured Storage	Scott McGonigal	05/28/13 17:03	Retrieve from Storage
JB37868-3.4	Scott McGonigal	GCMSL	05/28/13 17:03	Load on Instrument



GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries



Method Blank Summary

Job Number: JB37868

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI7458-MB1	I184626.D	1	05/25/13	SJM	n/a	n/a	VI7458

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37868-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.26	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.074	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.24	ug/kg	
108-88-3	Toluene	ND	1.0	0.11	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.16	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.14	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	104%
17060-07-0	1,2-Dichloroethane-D4	112%
2037-26-5	Toluene-D8	103%
460-00-4	4-Bromofluorobenzene	113%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	system artifact	16.48	16	ug/kg	J
	Total TIC, Volatile		0	ug/kg	

Method Blank Summary

Job Number: JB37868

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI7460-MB1	I184658.D	1	05/28/13	SJM	n/a	n/a	VI7460

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37868-2, JB37868-3

6.1.2
6

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.26	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.074	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.24	ug/kg	
108-88-3	Toluene	ND	1.0	0.11	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.16	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.14	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	100%
17060-07-0	1,2-Dichloroethane-D4	112%
2037-26-5	Toluene-D8	108%
460-00-4	4-Bromofluorobenzene	119%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Blank Spike Summary

Job Number: JB37868

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI7458-BS	I184627.D	1	05/25/13	SJM	n/a	n/a	VI7458

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37868-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	47.5	95	79-121
107-06-2	1,2-Dichloroethane	50	64.2	128	73-132
100-41-4	Ethylbenzene	50	48.7	97	78-119
98-82-8	Isopropylbenzene	50	47.8	96	75-122
1634-04-4	Methyl Tert Butyl Ether	50	52.1	104	73-122
108-88-3	Toluene	50	48.3	97	78-121
95-63-6	1,2,4-Trimethylbenzene	50	47.3	95	76-121
108-67-8	1,3,5-Trimethylbenzene	50	48.0	96	74-121
1330-20-7	Xylene (total)	150	141	94	79-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	102%	65-131%
17060-07-0	1,2-Dichloroethane-D4	109%	70-121%
2037-26-5	Toluene-D8	103%	80-128%
460-00-4	4-Bromofluorobenzene	104%	67-131%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JB37868

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI7460-BS	I184659.D	1	05/28/13	SJM	n/a	n/a	VI7460

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37868-2, JB37868-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	46.7	93	79-121
107-06-2	1,2-Dichloroethane	50	59.4	119	73-132
100-41-4	Ethylbenzene	50	50.3	101	78-119
98-82-8	Isopropylbenzene	50	52.8	106	75-122
1634-04-4	Methyl Tert Butyl Ether	50	47.5	95	73-122
108-88-3	Toluene	50	48.4	97	78-121
95-63-6	1,2,4-Trimethylbenzene	50	52.2	104	76-121
108-67-8	1,3,5-Trimethylbenzene	50	52.8	106	74-121
1330-20-7	Xylene (total)	150	145	97	79-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	65-131%
17060-07-0	1,2-Dichloroethane-D4	111%	70-121%
2037-26-5	Toluene-D8	108%	80-128%
460-00-4	4-Bromofluorobenzene	112%	67-131%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: JB37868

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB37849-4MS	I184676.D	1	05/28/13	SJM	n/a	n/a	VI7460
JB37849-4	I184675.D	1	05/28/13	SJM	n/a	n/a	VI7460

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37868-2, JB37868-3

CAS No.	Compound	JB37849-4		Spike	MS	MS	Limits
		ug/kg	Q	ug/kg	ug/kg	%	
71-43-2	Benzene	ND		49.7	40.1	81	47-130
107-06-2	1,2-Dichloroethane	ND		49.7	55.1	111	46-135
100-41-4	Ethylbenzene	ND		49.7	42.8	86	30-139
98-82-8	Isopropylbenzene	ND		49.7	43.1	87	30-140
1634-04-4	Methyl Tert Butyl Ether	ND		99	86.8	87	50-127
108-88-3	Toluene	ND		49.7	42.3	85	38-136
95-63-6	1,2,4-Trimethylbenzene	ND		49.7	42.0	85	20-145
108-67-8	1,3,5-Trimethylbenzene	ND		49.7	42.7	86	24-142
1330-20-7	Xylene (total)	1.1		149	124	82	31-140

CAS No.	Surrogate Recoveries	MS	JB37849-4	Limits
1868-53-7	Dibromofluoromethane	99%	99%	65-131%
17060-07-0	1,2-Dichloroethane-D4	113%	114%	70-121%
2037-26-5	Toluene-D8	108%	110%	80-128%
460-00-4	4-Bromofluorobenzene	114%	115%	67-131%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB37868

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB37502-3MS	I184630.D	1	05/25/13	SJM	n/a	n/a	VI7458
JB37502-3MSD	I184631.D	1	05/25/13	SJM	n/a	n/a	VI7458
JB37502-3	I184629.D	1	05/25/13	SJM	n/a	n/a	VI7458

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37868-1

CAS No.	Compound	JB37502-3		Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits
		ug/kg	Q							Rec/RPD
71-43-2	Benzene	58.7		71.5	63.6	7* a	65.9	10* a	4	47-130/22
107-06-2	1,2-Dichloroethane	ND		71.5	60.0	84	68.8	96	14	46-135/21
100-41-4	Ethylbenzene	925	E	71.5	532	-550* b	415	-714* b	25	30-139/25
98-82-8	Isopropylbenzene	94.1		71.5	98.5	6* a	95.3	2* a	3	30-140/27
1634-04-4	Methyl Tert Butyl Ether	1090	E	71.5	684	-568* b	670	-588* b	2	50-127/21
108-88-3	Toluene	402	E	71.5	206	-274* b	163	-334* b	23	38-136/24
95-63-6	1,2,4-Trimethylbenzene	1840	E	71.5	832	-1410* b	1150	-965* b	32* a	20-145/28
108-67-8	1,3,5-Trimethylbenzene	574	E	71.5	492	-115* b	444	-182* b	10	24-142/28
1330-20-7	Xylene (total)	4070	E	214	2000	-965* b	1820	-1049* b	9	31-140/26

CAS No.	Surrogate Recoveries	MS	MSD	JB37502-3	Limits
1868-53-7	Dibromofluoromethane	99%	97%	104%	65-131%
17060-07-0	1,2-Dichloroethane-D4	102%	102%	107%	70-121%
2037-26-5	Toluene-D8	102%	102%	103%	80-128%
460-00-4	4-Bromofluorobenzene	108%	108%	106%	67-131%

(a) Outside control limits due to matrix interference.

(b) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

6.4.1
6

Duplicate Summary

Job Number: JB37868

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB37849-2DUP	I184674.D	1	05/28/13	SJM	n/a	n/a	VI7460
JB37849-2	I184673.D	1	05/28/13	SJM	n/a	n/a	VI7460

The QC reported here applies to the following samples:

Method: SW846 8260B

JB37868-2, JB37868-3

CAS No.	Compound	JB37849-2		DUP		RPD	Limits
		ug/kg	Q	ug/kg	Q		
71-43-2	Benzene	0.86	J	0.75	J	14	20
107-06-2	1,2-Dichloroethane	ND		ND		nc	10
100-41-4	Ethylbenzene	ND		0.32	J	200* ^a	19
98-82-8	Isopropylbenzene	ND		ND		nc	15
1634-04-4	Methyl Tert Butyl Ether	8.3		2.9		96* ^b	16
108-88-3	Toluene	1.7		2.0		16	24
95-63-6	1,2,4-Trimethylbenzene	ND		ND		nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND		nc	10
1330-20-7	Xylene (total)	1.6		2.3		36* ^a	24

CAS No.	Surrogate Recoveries	DUP	JB37849-2	Limits
1868-53-7	Dibromofluoromethane	100%	98%	65-131%
17060-07-0	1,2-Dichloroethane-D4	112%	113%	70-121%
2037-26-5	Toluene-D8	109%	111%	80-128%
460-00-4	4-Bromofluorobenzene	117%	117%	67-131%

(a) High RPD due to low concentration of hit

(b) High RPD due to possible sample analyzed from different vials.

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB37868

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VI7422-BFB1	Injection Date:	04/26/13
Lab File ID:	I183726.D	Injection Time:	16:11
Instrument ID:	GCMSI		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	14670	15.9	Pass
75	30.0 - 60.0% of mass 95	41472	44.9	Pass
95	Base peak, 100% relative abundance	92413	100.0	Pass
96	5.0 - 9.0% of mass 95	6292	6.81	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) ^a Pass
174	50.0 - 120.0% of mass 95	83200	90.0	Pass
175	5.0 - 9.0% of mass 174	6686	7.23	(8.04) ^a Pass
176	95.0 - 101.0% of mass 174	81016	87.7	(97.4) ^a Pass
177	5.0 - 9.0% of mass 176	5324	5.76	(6.57) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VI7422-IC7422	I183727.D	04/26/13	16:52	00:41	Initial cal 0.5
VI7422-IC7422	I183728.D	04/26/13	17:21	01:10	Initial cal 1
VI7422-IC7422	I183729.D	04/26/13	17:49	01:38	Initial cal 2
VI7422-IC7422	I183730.D	04/26/13	18:18	02:07	Initial cal 5
VI7422-IC7422	I183731.D	04/26/13	18:47	02:36	Initial cal 10
VI7422-IC7422	I183732.D	04/26/13	19:16	03:05	Initial cal 200
VI7422-IC7422	I183733.D	04/26/13	20:14	04:03	Initial cal 100
VI7422-ICC7422	I183734.D	04/26/13	21:11	05:00	Initial cal 50
VI7422-IC7422	I183735.D	04/26/13	21:40	05:29	Initial cal 20
VI7422-ICV7422	I183736.D	04/26/13	22:09	05:58	Initial cal verification 50
VI7422-ICV7422	I183737.D	04/26/13	23:36	07:25	Initial cal verification 50

Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB37868

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VI7458-BFB	Injection Date:	05/25/13
Lab File ID:	I184623.D	Injection Time:	01:04
Instrument ID:	GCMSI		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	8196	18.6	Pass
75	30.0 - 60.0% of mass 95	22040	50.1	Pass
95	Base peak, 100% relative abundance	44010	100.0	Pass
96	5.0 - 9.0% of mass 95	3233	7.35	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) ^a Pass
174	50.0 - 120.0% of mass 95	36640	83.3	Pass
175	5.0 - 9.0% of mass 174	3076	6.99	(8.40) ^a Pass
176	95.0 - 101.0% of mass 174	35266	80.1	(96.3) ^a Pass
177	5.0 - 9.0% of mass 176	2403	5.46	(6.81) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VI7458-CC7422	I184624.D	05/25/13	02:02	00:58	Continuing cal 20
VI7458-MB1	I184626.D	05/25/13	03:01	01:57	Method Blank
VI7458-BS	I184627.D	05/25/13	03:30	02:26	Blank Spike
JB37502-3	I184629.D	05/25/13	04:28	03:24	(used for QC only; not part of job JB37868)
JB37502-3MS	I184630.D	05/25/13	04:57	03:53	Matrix Spike
JB37502-3MSD	I184631.D	05/25/13	05:26	04:22	Matrix Spike Duplicate
JB37868-1	I184633.D	05/25/13	06:25	05:21	1 AOI-5_MW-458_4-6'_52313
ZZZZZZ	I184634.D	05/25/13	06:54	05:50	(unrelated sample)

Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB37868

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VI7460-BFB	Injection Date:	05/28/13
Lab File ID:	I184655.D	Injection Time:	11:37
Instrument ID:	GCMSI		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	8511	18.6	Pass
75	30.0 - 60.0% of mass 95	23106	50.6	Pass
95	Base peak, 100% relative abundance	45698	100.0	Pass
96	5.0 - 9.0% of mass 95	3123	6.83	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) ^a Pass
174	50.0 - 120.0% of mass 95	38370	84.0	Pass
175	5.0 - 9.0% of mass 174	3028	6.63	(7.89) ^a Pass
176	95.0 - 101.0% of mass 174	37538	82.1	(97.8) ^a Pass
177	5.0 - 9.0% of mass 176	2568	5.62	(6.84) ^b Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VI7460-CC7422	I184656.D	05/28/13	12:18	00:41	Continuing cal 50
ZZZZZZ	I184658.D	05/28/13	14:14	02:37	(unrelated sample)
VI7460-MB1	I184658.D	05/28/13	14:14	02:37	Method Blank
VI7460-BS	I184659.D	05/28/13	14:53	03:16	Blank Spike
ZZZZZZ	I184661.D	05/28/13	16:02	04:25	(unrelated sample)
ZZZZZZ	I184663.D	05/28/13	17:08	05:31	(unrelated sample)
ZZZZZZ	I184664.D	05/28/13	17:37	06:00	(unrelated sample)
ZZZZZZ	I184665.D	05/28/13	18:06	06:29	(unrelated sample)
JB37868-2	I184666.D	05/28/13	18:35	06:58	2 AOI-5_MW-455_1-2'_52313
JB37868-3	I184667.D	05/28/13	19:03	07:26	3 AOI-5_MW-455_10-11_052313
ZZZZZZ	I184668.D	05/28/13	19:32	07:55	(unrelated sample)
ZZZZZZ	I184669.D	05/28/13	20:01	08:24	(unrelated sample)
ZZZZZZ	I184670.D	05/28/13	20:30	08:53	(unrelated sample)
ZZZZZZ	I184671.D	05/28/13	20:59	09:22	(unrelated sample)
ZZZZZZ	I184672.D	05/28/13	21:27	09:50	(unrelated sample)
JB37849-2	I184673.D	05/28/13	21:56	10:19	(used for QC only; not part of job JB37868)
JB37849-2DUP	I184674.D	05/28/13	22:25	10:48	Duplicate
JB37849-4	I184675.D	05/28/13	22:54	11:17	(used for QC only; not part of job JB37868)
JB37849-4MS	I184676.D	05/28/13	23:23	11:46	Matrix Spike

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB37868

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VI7458-CC7422	Injection Date:	05/25/13
Lab File ID:	I184624.D	Injection Time:	02:02
Instrument ID:	GCMSI	Method:	SW846 8260B

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Check Std	61903	7.19	181982	9.44	259113	10.36
Upper Limit ^a	123806	7.69	363964	9.94	518226	10.86
Lower Limit ^b	30952	6.69	90991	8.94	129557	9.86

Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
VI7458-MB1	60408	7.18	183454	9.44	260273	10.36
VI7458-BS	63724	7.19	182594	9.44	257544	10.36
JB37502-3	74284	7.19	187135	9.44	270755	10.36
JB37502-3MS	61121	7.19	209783	9.44	290593	10.36
JB37502-3MSD	71394	7.19	220339	9.44	297478	10.36
JB37868-1	78700	7.19	208971	9.44	295536	10.36
ZZZZZZ	61785	7.18	214373	9.44	304860	10.36

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB37868

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VI7460-CC7422	Injection Date:	05/28/13
Lab File ID:	I184656.D	Injection Time:	12:18
Instrument ID:	GCMSI	Method:	SW846 8260B

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Check Std	82791	7.19	232782	9.43	328422	10.36
Upper Limit ^a	165582	7.69	465564	9.93	656844	10.86
Lower Limit ^b	41396	6.69	116391	8.93	164211	9.86

Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
ZZZZZZ	78265	7.17	235928	9.44	333682	10.36
VI7460-MB1	78265	7.17	235928	9.44	333682	10.36
VI7460-BS	76875	7.19	240659	9.44	339899	10.36
ZZZZZZ	78148	7.18	200360	9.44	281380	10.36
ZZZZZZ	76876	7.17	214951	9.44	308226	10.36
ZZZZZZ	64985	7.18	203026	9.44	285808	10.36
ZZZZZZ	55370	7.18	205221	9.44	289099	10.36
JB37868-2	50698	7.18	197156	9.44	281573	10.36
JB37868-3	58725	7.18	216510	9.44	304577	10.36
ZZZZZZ	83379	7.18	232134	9.44	330310	10.36
ZZZZZZ	82458	7.17	238897	9.44	340335	10.36
ZZZZZZ	72584	7.18	224433	9.44	316810	10.36
ZZZZZZ	73531	7.18	223653	9.44	315331	10.36
ZZZZZZ	84480	7.18	237567	9.44	337815	10.36
JB37849-2	71153	7.18	212563	9.44	299496	10.36
JB37849-2DUP	71301	7.18	208382	9.44	297397	10.36
JB37849-4	70729	7.18	209043	9.44	294547	10.36
JB37849-4MS	64572	7.20	212018	9.44	298735	10.36

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JB37868

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8260B	Matrix: SO
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JB37868-1	I184633.D	101.0	105.0	103.0	107.0
JB37868-2	I184666.D	102.0	114.0	112.0	123.0
JB37868-3	I184667.D	100.0	112.0	108.0	123.0
JB37502-3MS	I184630.D	99.0	102.0	102.0	108.0
JB37502-3MSD	I184631.D	97.0	102.0	102.0	108.0
JB37849-2DUP	I184674.D	100.0	112.0	109.0	117.0
JB37849-4MS	I184676.D	99.0	113.0	108.0	114.0
VI7458-BS	I184627.D	102.0	109.0	103.0	104.0
VI7458-MB1	I184626.D	104.0	112.0	103.0	113.0
VI7460-BS	I184659.D	101.0	111.0	108.0	112.0
VI7460-MB1	I184658.D	100.0	112.0	108.0	119.0

Surrogate Compounds	Recovery Limits
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S1 = Dibromofluoromethane	65-131%
S2 = 1,2-Dichloroethane-D4	70-121%
S3 = Toluene-D8	80-128%
S4 = 4-Bromofluorobenzene	67-131%

Initial Calibration Summary

Page 1 of 5

Job Number: JB37868

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Response Factor Report MSI

Method : C:\MSDCHEM\1\METHODS\MI7422.M (RTE Integrator)

Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um

Last Update : Mon Apr 29 17:40:31 2013

Response via : Initial Calibration

Calibration Files

0.5	=I183727.D	1	=I183728.D	2	=I183729.D	5	=I183730.D
10	=I183731.D	20	=I183735.D	50	=I183734.D	100	=I183733.D
200	=I183732.D						

Compound

	0.5	1	2	5	10	20	50	100	200	Avg	%RSD
<hr/>											
1) I Tert Butyl Alcohol-d9							-----ISTD-----				
2) tertiary butyl alcohol				0.110	0.111	0.107	0.106	0.107	0.100	0.097	0.098
3) iso-butyl alcohol				0.019	0.022	0.021	0.024	0.023	0.021	0.021	0.022
4) 1,4-dioxane				0.008	0.008	0.009	0.009	0.009	0.009	0.008	0.008#
5) I pentafluorobenzene				0.403	0.373	0.370	0.379	0.305	0.348	0.348	0.386
6) chlorodifluoromethane				0.440	0.476	0.542	0.548	0.446	0.527	0.542	0.582
7) dichlorodifluoromethane				0.524	0.495	0.471	0.464	0.395	0.437	0.452	0.471
8) chloromethane				0.468	0.535	0.580	0.580	0.491	0.561	0.577	0.608
9) vinyl chloride				0.387	0.340	0.328	0.308	0.295	0.287	0.291	0.299
10) bromomethane				0.211	0.241	0.221	0.222	0.206	0.209	0.218	0.225
11) chloroethane				0.216	0.228	0.258	0.256	0.229	0.253	0.252	0.272
12) trichlorofluoromethane				0.490	0.544	0.591	0.597	0.523	0.579	0.598	0.631
13) ethyl ether				0.057	0.054	0.049	0.051	0.045	0.048	0.047	0.049
14) acrolein				0.024	0.028	0.021	0.021	0.022	0.023	0.023	0.023
15) freon 113				0.076	0.077	0.049	0.052	0.054	0.056	0.061	0.061
16) 1,1-dichloroethene				0.037	0.042	0.041	0.040	0.042	0.042	0.044	0.041
17) acetone				0.172	0.190	0.200	0.199	0.183	0.198	0.205	0.215
18) iodomethane				0.076	0.077	0.049	0.052	0.054	0.056	0.061	0.061
19) carbon disulfide				0.076	0.077	0.049	0.052	0.054	0.056	0.061	0.061
20) methyl acetate				0.076	0.077	0.049	0.052	0.054	0.056	0.061	0.061
21) allyl chloride				0.076	0.077	0.049	0.052	0.054	0.056	0.061	0.061
22) acetonitrile				0.076	0.077	0.049	0.052	0.054	0.056	0.061	0.061
	----- Linear regression -----								Coefficient = 0.9982		

6.9.1
6

Initial Calibration Summary

Page 2 of 5

Job Number: JB37868

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

$$\text{Response Ratio} = -0.00288 + 0.05593 * A$$

23)	methylene chloride	0.407	0.394	0.353	0.372	0.376	0.390	0.382	4.99			
24)	methyl tert butyl ether	0.974	1.004	1.004	0.915	0.950	0.883	0.940	0.942	0.987	0.955	4.30
25)	acrylonitrile	0.071	0.086	0.085	0.080	0.090	0.082	0.085	0.087	0.091	0.084	7.30
26)	trans-1,2-dichloroethene	0.403	0.459	0.415	0.393	0.379	0.337	0.366	0.373	0.387	0.390	8.75
27)	hexane	0.496	0.485	0.456	0.367	0.409	0.406	0.442	0.437	10.55		
28)	di-isopropyl ether	1.043	1.030	1.045	1.018	1.031	0.926	0.977	0.964	1.004	1.004	4.04
29)	vinyl acetate	0.198	0.202	0.209	0.202	0.180	0.199	0.200	0.207	0.200	0.200	4.37
30)	1,1-dichloroethane	0.537	0.567	0.592	0.634	0.618	0.562	0.607	0.622	0.642	0.598	5.99
31)	chloroprene	0.408	0.397	0.443	0.464	0.485	0.413	0.462	0.463	0.504	0.449	8.11
32)	ethyl tert-butyl ether	1.069	1.061	1.077	1.020	1.061	0.984	1.036	1.026	1.090	1.047	3.18
33)	2-butanone	0.029	0.032	0.029	0.031	0.032	0.034	0.031	0.031	0.031	0.031	6.43
34)	ethyl acetate	0.029	0.037	0.041	0.032	0.032	0.032	0.034	0.034	0.034	0.034	11.77
35)	2,2-dichloropropane	0.575	0.521	0.533	0.531	0.518	0.462	0.513	0.533	0.553	0.527	5.83
36)	cis-1,2-dichloroethene	0.369	0.442	0.418	0.406	0.412	0.377	0.400	0.406	0.420	0.406	5.51
37)	methacrylonitrile	0.119	0.112	0.095	0.109	0.103	0.111	0.111	0.111	0.118	0.110	7.10
38)	propionitrile	0.032	0.031	0.031	0.034	0.032	0.034	0.034	0.037	0.033	0.033	6.03
39)	bromochloromethane	0.169	0.193	0.178	0.185	0.176	0.187	0.189	0.195	0.184	0.184	4.88
40)	tetrahydrofuran	0.108	0.093	0.093	0.078	0.079	0.081	0.083	0.088	0.088	0.088	12.35
41)	chloroform	0.631	0.591	0.635	0.610	0.628	0.579	0.620	0.634	0.663	0.621	4.02
42)	tert-Butyl Formate	0.242	0.256	0.232	0.250	0.230	0.251	0.251	0.270	0.248	0.248	5.32
43)	dibromofluoromethane (s)	0.455	0.365	0.356	0.365	0.375	0.383	0.383	0.383	0.383	0.383	10.64
44)	1,1,1-trichloroethane	0.449	0.521	0.515	0.550	0.535	0.509	0.555	0.580	0.601	0.535	8.26
45)	cyclohexane	0.465	0.450	0.500	0.523	0.500	0.465	0.516	0.549	0.570	0.504	7.93
46)	I 1,4-difluorobenzene	-----	-----	-----	-----	-----	ISTD-----					
47)	1,2-dichloroethane-d4 (s)	0.318	0.288	0.242	0.235	0.238	0.244	0.261	0.261	0.261	0.261	13.14
48)	carbon tetrachloride	0.253	0.267	0.313	0.320	0.313	0.305	0.336	0.352	0.365	0.314	11.58
49)	1,1-dichloropropene	0.290	0.283	0.313	0.330	0.321	0.299	0.328	0.341	0.355	0.318	7.49
50)	isopropyl acetate	0.068	0.085	0.076	0.081	0.074	0.078	0.077	0.082	0.078	0.078	6.67
51)	benzene	0.971	1.013	0.996	0.999	0.990	0.926	0.994	1.007	1.031	0.992	2.99

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Initial Calibration Summary

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Job Number: JB37868

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

52)	2,2,4-trimethylpentane	0.729	0.760	0.827	0.874	0.866	0.754	0.851	0.861	0.925	0.827	7.95
53)	tert-amyl methyl ether	0.662	0.673	0.841	0.666	0.690	0.653	0.688	0.676	0.718	0.696	8.25
54)	1,2-dichloroethane	0.258	0.268	0.272	0.270	0.281	0.266	0.284	0.285	0.299	0.276	4.55
55)	heptane	0.153	0.164	0.173	0.172	0.145	0.160	0.163	0.175	0.163	0.163	6.44
56)	n-butyl alcohol	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.005#	0.005#	7.78
57)	trichloroethene	0.218	0.225	0.236	0.254	0.250	0.230	0.254	0.259	0.270	0.244	7.15
58)	ethyl acrylate	0.336	0.343	0.295	0.326	0.335	0.362	0.333	0.333	0.333	0.333	6.59
59)	methyl methacrylate	0.111	0.116	0.119	0.123	0.114	0.125	0.127	0.133	0.121	0.121	6.20
60)	1,2-dichloropropane	0.234	0.232	0.234	0.238	0.238	0.223	0.238	0.238	0.248	0.236	2.88
61)	methylcyclohexane	0.348	0.348	0.394	0.418	0.417	0.371	0.412	0.414	0.444	0.396	8.48
62)	dibromomethane	0.133	0.138	0.135	0.141	0.132	0.140	0.141	0.146	0.138	0.138	3.41
63)	bromodichloromethane	0.257	0.297	0.307	0.308	0.310	0.296	0.317	0.321	0.340	0.306	7.38
64)	2-nitropropane	0.068	0.066	0.060	0.061	0.059	0.063	0.063	0.063	0.063	0.063	6.00
65)	2-chloroethyl vinyl ether	0.083	0.086	0.083	0.090	0.082	0.090	0.088	0.093	0.087	0.087	4.81
66)	epichlorohydrin	0.021	0.016	0.015	0.016	0.015	0.015	0.015	0.016	0.016	0.016	13.08
67)	cis-1,3-dichloropropene	0.350	0.357	0.383	0.378	0.384	0.361	0.391	0.391	0.408	0.378	4.95
68)	4-methyl-2-pentanone	0.061	0.070	0.065	0.068	0.070	0.074	0.068	0.068	0.068	0.068	6.59
69)	3-methyl-1-butanol	0.004	0.004	0.005	0.004	0.005	0.005	0.005	0.005	0.005#	0.005#	8.56
70)	toluene	0.915	0.993	1.000	1.019	1.019	0.955	1.028	1.044	1.085	1.006	4.90
71)	trans-1,3-dichloropropene	0.323	0.332	0.326	0.315	0.337	0.309	0.333	0.334	0.351	0.329	3.80
72)	ethyl methacrylate	0.209	0.242	0.242	0.229	0.240	0.232	0.247	0.249	0.262	0.239	6.16
73)	1,1,2-trichloroethane	0.162	0.163	0.156	0.161	0.153	0.158	0.159	0.167	0.160	0.160	2.71
74)	2-hexanone	0.055	0.062	0.057	0.061	0.061	0.065	0.060	0.060	0.060	0.060	5.48
75)	I chlorobenzene-d5										-----ISTD-----	
76)	toluene-d8 (s)	1.062	1.126	1.056	1.090	1.139	1.158				1.105	3.81
77)	tetrachloroethene	0.279	0.297	0.311	0.341	0.331	0.313	0.342	0.349	0.361	0.325	8.23
78)	1,3-dichloropropane	0.327	0.361	0.375	0.357	0.375	0.357	0.372	0.369	0.381	0.364	4.42
79)	butyl acetate	0.154	0.133	0.144	0.133	0.140	0.133	0.143	0.143	0.143	0.140	5.60
80)	3,3-Dimethyl-1-Butanol	0.024	0.021	0.019	0.021	0.020	0.021	0.020	0.022	0.021	0.021	7.47
81)	dibromochloromethane	0.244	0.306	0.288	0.283	0.300	0.289	0.308	0.313	0.330	0.296	8.23

Initial Calibration Summary

Job Number: JB37868

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

82)	1,2-dibromoethane	0.230	0.249	0.250	0.238	0.250	0.239	0.253	0.252	0.262	0.247	3.86
83)	chlorobenzene	0.753	0.798	0.836	0.841	0.829	0.795	0.840	0.837	0.867	0.822	4.13
84)	1,1,1,2-tetrachloroethane	0.265	0.286	0.291	0.288	0.300	0.287	0.308	0.311	0.321	0.295	5.67
85)	ethylbenzene	1.337	1.342	1.363	1.395	1.377	1.317	1.404	1.413	1.456	1.378	3.16
86)	m,p-xylene	0.491	0.519	0.531	0.555	0.548	0.519	0.552	0.553	0.562	0.537	4.34
87)	o-xylene	0.513	0.525	0.509	0.535	0.526	0.517	0.543	0.542	0.556	0.529	2.94
88)	styrene	0.774	0.872	0.865	0.891	0.891	0.854	0.915	0.917	0.943	0.880	5.55
89)	bromoform	0.191	0.187	0.180	0.189	0.189	0.200	0.206	0.221	0.196	6.73	6.91
90)	I 1,4-dichlorobenzene-d	-----ISTD-----										
91)	4-bromofluorobenzene (s)	0.693	0.729	0.686	0.697	0.729	0.740				0.712	3.18
92)	isopropylbenzene	2.272	2.345	2.533	2.653	2.562	2.393	2.555	2.593	2.606	2.501	5.26
93)	cyclohexanone										0.000#	-1.00
94)	1,1,2,2-tetrachloroethane	0.606	0.595	0.587	0.553	0.594	0.548	0.565	0.566	0.585	0.578	3.52
95)	trans-1,4-dichloro-2-butene	0.131	0.128	0.124	0.143	0.128	0.134	0.135	0.143		0.133	5.21
96)	1,2,3-trichloropropane	0.128	0.134	0.120	0.142	0.125	0.131	0.131	0.135		0.131	5.06
97)	n-propylbenzene	3.076	2.949	3.042	3.145	3.021	2.797	2.987	3.010	3.042	3.008	3.20
98)	bromobenzene	0.654	0.701	0.691	0.695	0.692	0.671	0.701	0.692	0.705	0.689	2.38
99)	2-chlorotoluene	0.638	0.686	0.659	0.667	0.645	0.610	0.638	0.634	0.643	0.647	3.35
100)	4-chlorotoluene	2.234	2.013	2.076	1.976	1.899	1.766	1.865	1.869	1.924	1.958	7.03
101)	1,3,5-trimethylbenzene	2.135	2.107	2.174	2.270	2.229	2.088	2.216	2.238	2.259	2.191	3.08
102)	tert-butylbenzene	1.718	1.819	1.849	1.904	1.878	1.766	1.891	1.916	1.935	1.853	3.93
103)	pentachloroethane	0.406	0.427	0.427	0.435	0.423	0.452	0.461	0.467		0.437	4.76
104)	1,2,4-trimethylbenzene	2.272	2.197	2.284	2.335	2.263	2.125	2.253	2.264	2.303	2.255	2.72
105)	sec-butylbenzene	2.730	2.594	2.923	2.981	2.908	2.726	2.928	2.964	2.976	2.859	4.88
106)	p-isopropyltoluene	2.282	2.255	2.489	2.545	2.403	2.300	2.427	2.447	2.486	2.404	4.27
107)	benzyl chloride	1.173	1.136	1.115	1.075	1.133	1.008	1.095	1.105	1.199	1.115	5.00
108)	1,3-dichlorobenzene	1.415	1.353	1.420	1.409	1.352	1.291	1.341	1.347	1.382	1.368	3.09
109)	1,4-dichlorobenzene	1.367	1.466	1.412	1.424	1.381	1.316	1.364	1.363	1.401	1.388	3.11
110)	1,2-dichlorobenzene	1.299	1.299	1.300	1.316	1.305	1.252	1.301	1.296	1.306	1.297	1.38
111)	n-butylbenzene	1.202	1.138	1.317	1.382	1.292	1.215	1.316	1.323	1.340	1.281	6.11

Initial Calibration Summary

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Job Number: JB37868

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

112)	hexachloroethane	0.494	0.455	0.484	0.466	0.500	0.511	0.514	0.489	4.51
113)	1,2-dibromo-3-chloropropane	0.117	0.131	0.114	0.131	0.122	0.124	0.125	0.120	0.123
114)	1,3,5-Trichlorobenzene	1.082	1.046	1.107	1.153	1.103	1.057	1.112	1.099	1.041
115)	1,2,4-trichlorobenzene	1.000	0.957	0.964	0.945	0.924	0.906	0.950	0.940	0.865
116)	hexachlorobutadiene	0.526	0.616	0.606	0.618	0.600	0.569	0.611	0.599	0.548
117)	naphthalene	2.068	1.910	1.702	1.837	1.872	1.867	1.820	1.646	1.840
118)	1,2,3-trichlorobenzene	0.932	0.862	0.868	0.818	0.827	0.826	0.850	0.810	0.716

(#) = Out of Range ### Number of calibration levels exceeded format ###

MI7422.M

Mon Apr 29 17:42:49 2013 RPT1

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6

Initial Calibration Verification

Job Number: JB37868

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VI7422-ICV7422

Lab FileID: I183736.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\VI7422\I183736.D Vial: 41
 Acq On : 26 Apr 2013 10:09 pm Operator: SCOTTM
 Sample : ICV7422-50 Inst : MSI
 Misc : MS47200,VI7422,,,,,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MI7422.M (RTE Integrator)
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Mon Apr 29 11:03:09 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	97	0.00
2	tertiary butyl alcohol	0.105	0.105	0.0	102	0.00
3	iso-butyl alcohol	0.022	0.023	-4.5	98	0.00
4	1,4-dioxane	0.008	0.010#	-25.0#	106	0.00
5	I pentafluorobenzene	1.000	1.000	0.0	100	0.00
6	chlorodifluoromethane	0.364	0.393	-8.0	113	0.00
7	dichlorodifluoromethane	0.513	0.517	-0.8	98	0.01
8	chloromethane	0.464	0.432	6.9	99	0.00
9	vinyl chloride	0.550	0.542	1.5	97	0.00
10	bromomethane	0.317	0.328	-3.5	114	0.02
11	chloroethane	0.219	0.223	-1.8	107	0.02
12	trichlorofluoromethane	0.569	0.580	-1.9	100	0.00
13	ethyl ether	0.181	0.173	4.4	98	0.00
14	acrolein	0.050	0.051	-2.0	109	0.00
15	freon 113	0.245	0.280	-14.3	111	0.00
16	1,1-dichloroethene	0.485	0.490	-1.0	100	0.00
17	acetone	0.023	0.021	8.7	98	0.00
18	iodomethane	0.633	0.665	-5.1	100	0.00
19	carbon disulfide	1.171	1.203	-2.7	99	0.00
20	methyl acetate	0.041	0.059	-43.9#	141	0.00
21	allyl chloride	0.195	0.196	-0.5	99	0.00
22	acetonitrile	500.000	469.150	6.2	101	0.00
23	methylene chloride	0.382	0.368	3.7	99	0.00
24	methyl tert butyl ether	0.955	0.460	3.8	99	0.00
25	acrylonitrile	0.084	0.081	3.6	96	0.00
26	trans-1,2-dichloroethene	0.390	0.362	7.2	99	0.00
27	hexane	0.437	0.454	-3.9	111	0.00
28	di-isopropyl ether	1.004	1.012	-0.8	104	0.00
29	vinyl acetate	0.200	0.194	3.0	98	0.00
30	1,1-dichloroethane	0.598	0.600	-0.3	99	0.00
31	chloroprene	0.449	0.475	-5.8	103	0.00
32	ethyl tert-butyl ether	1.047	1.073	-2.5	104	0.00
33	2-butanone	0.031	0.030	3.2	97	0.00
34	ethyl acetate	0.034	0.032	5.9	100	0.00
35	2,2-dichloropropane	0.527	0.501	4.9	98	0.00
36	cis-1,2-dichloroethene	0.406	0.396	2.5	99	0.00
37	methacrylonitrile	0.110	0.105	4.5	96	0.00

Initial Calibration Verification

Job Number: JB37868

Sample: VI7422-ICV7422

Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: I183736.D

38	propionitrile	0.033	0.032	3.0	97	0.00	8.97
39	bromochloromethane	0.184	0.186	-1.1	100	0.00	9.23
40	tetrahydrofuran	0.088	0.076	13.6	97	0.00	9.27
41	chloroform	0.621	0.615	1.0	99	0.00	9.29
42	tert-Butyl Formate	0.248	0.229	7.7	92	0.00	9.32
43 S	dibromofluoromethane (s)	0.383	0.365	4.7	103	0.00	9.49
44	1,1,1-trichloroethane	0.535	0.542	-1.3	98	0.00	9.54
45	cyclohexane	0.504	0.514	-2.0	100	0.00	9.62
46 I	1,4-difluorobenzene	1.000	1.000	0.0	100	0.00	10.37
47 S	1,2-dichloroethane-d4 (s)	0.261	0.237	9.2	101	0.00	9.91
48	carbon tetrachloride	0.314	0.331	-5.4	99	0.00	9.75
49	1,1-dichloropropene	0.318	0.324	-1.9	99	0.00	9.73
50	isopropyl acetate	0.078	0.078	0.0	100	0.00	9.92
51	benzene	0.992	0.979	1.3	99	0.00	9.99
52	2,2,4-trimethylpentane	0.827	0.939	-13.5	111	0.00	10.00
53	tert-amyl methyl ether	0.696	0.694	0.3	101	0.00	10.03
54	1,2-dichloroethane	0.276	0.277	-0.4	98	0.00	10.00
55	heptane	0.163	0.183	-12.3	115	0.00	10.18
56	n-butyl alcohol	0.005	0.005#	0.0	103	0.00	10.50
57	trichloroethene	0.244	0.251	-2.9	99	0.00	10.71
58	ethyl acrylate	0.333	0.335	-0.6	103	0.00	10.94
59	methyl methacrylate	0.121	0.122	-0.8	98	0.00	10.99
60	1,2-dichloropropane	0.236	0.235	0.4	99	0.00	10.97
61	methylcyclohexane	0.396	0.436	-10.1	106	0.00	10.94
62	dibromomethane	0.138	0.136	1.4	98	0.00	11.13
63	bromodichloromethane	0.306	0.315	-2.9	100	0.00	11.27
64	2-nitropropane	0.063	0.058	7.9	96	0.00	11.48
65	2-chloroethyl vinyl ether	0.087	0.090	-3.4	100	0.00	11.51
66	epichlorohydrin	0.016	0.016	0.0	102	0.00	11.63
67	cis-1,3-dichloropropene	0.378	0.379	-0.3	97	0.00	11.73
68	4-methyl-2-pentanone	0.069	0.067	2.9	98	0.00	11.82
69	3-methyl-1-butanol	0.005	0.005#	0.0	103	0.00	11.85
70	toluene	1.006	1.023	-1.7	100	0.00	12.09
71	trans-1,3-dichloropropene	0.329	0.323	1.8	97	0.00	12.29
72	ethyl methacrylate	0.239	0.243	-1.7	99	0.00	12.29
73	1,1,2-trichloroethane	0.160	0.157	1.9	100	0.00	12.50
74	2-hexanone	0.057	0.057	0.0	95	0.00	12.68
75 I	chlorobenzene-d5	1.000	1.000	0.0	101	0.00	13.54
76 S	toluene-d8 (s)	1.105	1.114	-0.8	103	0.00	12.02
77	tetrachloroethene	0.325	0.337	-3.7	100	0.00	12.68
78	1,3-dichloropropane	0.364	0.359	1.4	98	0.00	12.69
79	butyl acetate	0.140	0.140	0.0	101	0.00	12.76
80	3,3-Dimethyl-1-Butanol	0.021	0.020	4.8	98	0.00	12.86
81	dibromochloromethane	0.296	0.303	-2.4	100	0.00	12.95
82	1,2-dibromoethane	0.247	0.245	0.8	98	0.00	13.10
83	chlorobenzene	0.822	0.821	0.1	99	0.00	13.57
84	1,1,1,2-tetrachloroethane	0.295	0.302	-2.4	99	0.00	13.62
85	ethylbenzene	1.378	1.382	-0.3	99	0.00	13.62
86	m,p-xylene	0.537	0.541	-0.7	99	0.00	13.73
87	o-xylene	0.529	0.530	-0.2	99	0.00	14.15
88	styrene	0.880	0.890	-1.1	98	0.00	14.16
89	bromoform	0.196	0.197	-0.5	99	0.00	14.42
90 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	101	0.00	15.89
91 S	4-bromofluorobenzene (s)	0.712	0.713	-0.1	103	0.00	14.70
92	isopropylbenzene	2.501	2.514	-0.5	99	0.00	14.49
93	cyclohexanone	0.000	0.012	0.0	0#	0.00	14.65
94	1,1,2,2-tetrachloroethane	0.578	0.547	5.4	97	0.00	14.80

Initial Calibration Verification

Job Number: JB37868

Sample: VI7422-ICV7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183736.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

95	trans-1,4-dichloro-2-bute	0.133	0.126	5.3	95	0.00	14.84
96	1,2,3-trichloropropane	0.131	0.125	4.6	96	0.00	14.87
97	n-propylbenzene	3.008	2.942	2.2	99	0.00	14.91
98	bromobenzene	0.689	0.683	0.9	98	0.00	14.89
99	2-chlorotoluene	0.647	0.626	3.2	99	0.00	15.06
100	4-chlorotoluene	1.958	1.835	6.3	99	0.00	15.16
101	1,3,5-trimethylbenzene	2.191	2.175	0.7	99	0.00	15.06
102	tert-butylbenzene	1.853	1.856	-0.2	99	0.00	15.42
103	pentachloroethane	0.437	0.447	-2.3	99	0.00	15.50
104	1,2,4-trimethylbenzene	2.255	2.202	2.4	98	0.00	15.47
105	sec-butylbenzene	2.859	2.854	0.2	98	0.00	15.65
106	p-isopropyltoluene	2.404	2.370	1.4	98	0.00	15.77
107	benzyl chloride	1.115	1.098	1.5	101	0.00	16.04
108	1,3-dichlorobenzene	1.368	1.322	3.4	99	0.00	15.84
109	1,4-dichlorobenzene	1.388	1.333	4.0	98	0.00	15.92
110	1,2-dichlorobenzene	1.297	1.265	2.5	98	0.00	16.33
111	n-butylbenzene	1.281	1.266	1.2	97	0.00	16.21
112	hexachloroethane	0.487	0.489	-0.4	98	0.00	16.61
113	1,2-dibromo-3-chloropropane	0.123	0.120	2.4	97	0.00	17.15
114	1,3,5-Trichlorobenzene	1.089	1.067	2.0	97	0.00	17.35
115	1,2,4-trichlorobenzene	0.939	0.916	2.4	97	0.00	18.02
116	hexachlorobutadiene	0.588	0.593	-0.9	98	0.00	18.14
117	naphthalene	1.840	1.817	1.3	98	0.00	18.30
118	1,2,3-trichlorobenzene	0.834	0.824	1.2	97	0.00	18.56

(#) = Out of Range
I183734.D MI7422.M

SPCC's out = 0 CCC's out = 0
Mon Apr 29 11:06:22 2013 RPT1

Initial Calibration Verification

Job Number: JB37868

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VI7422-ICV7422

Lab FileID: I183737.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\VI7422\I183737.D Vial: 44
 Acq On : 26 Apr 2013 11:36 pm Operator: SCOTTM
 Sample : ICV7422-50 (acetates) Inst : MSI
 Misc : MS47200,VI7422,,,,,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MI7422.M (RTE Integrator)
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Mon Apr 29 11:03:09 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	96	0.00	7.19
2	tertiary butyl alcohol		-----	NA			
3	iso-butyl alcohol		-----	NA			
4	1,4-dioxane		-----	NA			
5	I pentafluorobenzene	1.000	1.000	0.0	100	0.00	9.45
6	chlorodifluoromethane		-----	NA			
7	dichlorodifluoromethane		-----	NA			
8	chloromethane		-----	NA			
9	vinyl chloride		-----	NA			
10	bromomethane		-----	NA			
11	chloroethane		-----	NA			
12	trichlorofluoromethane		-----	NA			
13	ethyl ether		-----	NA			
14	acrolein		-----	NA			
15	freon 113		-----	NA			
16	1,1-dichloroethene		-----	NA			
17	acetone		-----	NA			
18	iodomethane		-----	NA			
19	carbon disulfide		-----	NA			
20	methyl acetate	0.041	0.041	0.0	96	0.00	7.02
21	allyl chloride		-----	NA			
23	methylene chloride		AvgRF	CCRF	% Dev		
24	methyl tert butyl ether		-----	NA			
25	acrylonitrile		-----	NA			
26	trans-1,2-dichloroethene		-----	NA			
27	hexane		-----	NA			
28	di-isopropyl ether		-----	NA			
29	vinyl acetate		-----	NA			
30	1,1-dichloroethane		-----	NA			
31	chloroprene		-----	NA			
32	ethyl tert-butyl ether		-----	NA			
33	2-butanone		-----	NA			
34	ethyl acetate		-----	NA			
35	2,2-dichloropropane		-----	NA			
36	cis-1,2-dichloroethene		-----	NA			
37	methacrylonitrile		-----	NA			
38	propionitrile		-----	NA			
39	bromochloromethane		-----	NA			
40	tetrahydrofuran		-----	NA			

Initial Calibration Verification

Job Number: JB37868

Sample: VI7422-ICV7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183737.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

41	chloroform		-----	-NA-----							
43 S	dibromofluoromethane (s)		-----	-NA-----							
44	1,1,1-trichloroethane		-----	-NA-----							
46 I	1,4-difluorobenzene	1.000	1.000	0.0	98	0.00	10.37				
47 s	1,2-dichloroethane-d4 (s)		-----	-NA-----							
48	carbon tetrachloride		-----	-NA-----							
49	1,1-dichloropropene		-----	-NA-----							
50	isopropyl acetate		-----	-NA-----							
51	benzene		-----	-NA-----							
52	2,2,4-trimethylpentane		-----	-NA-----							
53	tert-amyl methyl ether		-----	-NA-----							
54	1,2-dichloroethane		-----	-NA-----							
55	heptane		-----	-NA-----							
56	n-butyl alcohol		-----	-NA-----							
57	trichloroethene		-----	-NA-----							
58	ethyl acrylate		-----	-NA-----							
59	methyl methacrylate		-----	-NA-----							
60	1,2-dichloropropane		-----	-NA-----							
61	methylcyclohexane		-----	-NA-----							
62	dibromomethane		-----	-NA-----							
63	bromodichloromethane		-----	-NA-----							
64	2-nitropropane		-----	-NA-----							
65	2-chloroethyl vinyl ether		-----	-NA-----							
66	epichlorohydrin		-----	-NA-----							
67	cis-1,3-dichloropropene		-----	-NA-----							
68	4-methyl-2-pentanone		-----	-NA-----							
69	3-methyl-1-butanol		-----	-NA-----							
70	toluene		-----	-NA-----							
71	trans-1,3-dichloropropene		-----	-NA-----							
72	ethyl methacrylate		-----	-NA-----							
73	1,1,2-trichloroethane		-----	-NA-----							
74	2-hexanone		-----	-NA-----							
75 I	chlorobenzene-d5	1.000	1.000	0.0	98	0.00	13.54				
76 S	toluene-d8 (s)		-----	-NA-----							
77	tetrachloroethene		-----	-NA-----							
78	1,3-dichloropropane		-----	-NA-----							
79	butyl acetate		-----	-NA-----							
80	3,3-Dimethyl-1-Butanol		-----	-NA-----							
81	dibromochloromethane		-----	-NA-----							
82	1,2-dibromoethane		-----	-NA-----							
83	chlorobenzene		-----	-NA-----							
84	1,1,1,2-tetrachloroethane		-----	-NA-----							
85	ethylbenzene		-----	-NA-----							
86	m,p-xylene		-----	-NA-----							
87	o-xylene		-----	-NA-----							
88	styrene		-----	-NA-----							
89	bromoform		-----	-NA-----							
90 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	94	0.00	15.89				
91 S	4-bromofluorobenzene (s)		-----	-NA-----							
92	isopropylbenzene		-----	-NA-----							
93	cyclohexanone		-----	-NA-----							
94	1,1,2,2-tetrachloroethane		-----	-NA-----							
95	trans-1,4-dichloro-2-bute		-----	-NA-----							
96	1,2,3-trichloropropane		-----	-NA-----							
97	n-propylbenzene		-----	-NA-----							

Initial Calibration Verification

Job Number: JB37868

Sample: VI7422-ICV7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183737.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

98	bromobenzene	-----NA-----
99	2-chlorotoluene	-----NA-----
100	4-chlorotoluene	-----NA-----
101	1,3,5-trimethylbenzene	-----NA-----
102	tert-butylbenzene	-----NA-----
103	pentachloroethane	-----NA-----
104	1,2,4-trimethylbenzene	-----NA-----
105	sec-butylbenzene	-----NA-----
106	p-isopropyltoluene	-----NA-----
107	benzyl chloride	-----NA-----
108	1,3-dichlorobenzene	-----NA-----
109	1,4-dichlorobenzene	-----NA-----
110	1,2-dichlorobenzene	-----NA-----
111	n-butylbenzene	-----NA-----
112	hexachloroethane	-----NA-----
113	1,2-dibromo-3-chloropropane	-----NA-----
114	1,3,5-Trichlorobenzene	-----NA-----
115	1,2,4-trichlorobenzene	-----NA-----
116	hexachlorobutadiene	-----NA-----
117	naphthalene	-----NA-----
118	1,2,3-trichlorobenzene	-----NA-----

(#= Out of Range
I183734.D MI7422.MSPCC's out = 0 CCC's out = 0
Mon Apr 29 11:07:02 2013 RPT1

Continuing Calibration Summary

Job Number: JB37868

Sample: VI7458-CC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I184624.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\VI7458\I184624.D Vial: 35
 Acq On : 25 May 2013 2:02 am Operator: SCOTTM
 Sample : CC7422-20 Inst : MSI
 Misc : MS48910,VI7458,,,,,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MI7422.M (RTE Integrator)
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Tue May 21 17:53:40 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	86	-0.01
2	tertiary butyl alcohol	0.105	0.100	4.8	81	-0.02
3	iso-butyl alcohol	0.022	0.022	0.0	77	-0.02
4	1,4-dioxane	0.008	0.008#	0.0	78	0.00
5	I pentafluorobenzene	1.000	1.000	0.0	75	-0.01
6	chlorodifluoromethane	0.364	0.433	-19.0	106	0.00
7	dichlorodifluoromethane	0.513	0.568	-10.7	95	0.00
8	chloromethane	0.464	0.463	0.2	88	0.00
9	vinyl chloride	0.550	0.489	11.1	75	0.00
10	bromomethane	0.317	0.323	-1.9	82	0.00
11	chloroethane	0.219	0.214	2.3	78	0.00
12	trichlorofluoromethane	0.569	0.702	-23.4#	101	-0.01
13	ethyl ether	0.181	0.169	6.6	75	0.00
14	acrolein	0.050	0.068	-36.0#	114	-0.01
15	freon 113	0.245	0.239	2.4	78	0.00
16	1,1-dichloroethene	0.485	0.498	-2.7	84	0.00
17	acetone	0.023	0.022	4.3	79	0.00
18	iodomethane	0.633	0.649	-2.5	80	0.00
19	carbon disulfide	1.171	1.083	7.5	75	0.00
20	methyl acetate	0.041	0.037	9.8	68	-0.01
21	allyl chloride	0.195	0.180	7.7	74	0.00
22	acetonitrile	200.000	236.074	True	Calc.	% Drift
				-18.0	100	-0.01
23	methylene chloride	0.382	0.361	5.5	77	0.00
24	methyl tert butyl ether	0.955	0.975	-2.1	83	-0.01
25	acrylonitrile	0.084	0.077	8.3	71	-0.01
26	trans-1,2-dichloroethene	0.390	0.344	11.8	76	0.00
27	hexane	0.437	0.378	13.5	77	0.00
28	di-isopropyl ether	1.004	0.882	12.2	71	-0.01
29	vinyl acetate	0.200	0.196	2.0	81	-0.01
30	1,1-dichloroethane	0.598	0.609	-1.8	81	0.00
31	chloroprene	0.449	0.456	-1.6	83	0.00
32	ethyl tert-butyl ether	1.047	1.029	1.7	78	-0.01
33	2-butanone	0.031	0.029	6.5	76	-0.01
34	ethyl acetate	0.034	0.028	17.6	66	0.00
35	2,2-dichloropropane	0.527	0.556	-5.5	90	-0.01
36	cis-1,2-dichloroethene	0.406	0.380	6.4	76	-0.01
37	methacrylonitrile	0.110	0.096	12.7	70	0.00

Continuing Calibration Summary

Page 2 of 3

Job Number: JB37868

Sample: VI7458-CC7422

Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: I184624.D

38	propionitrile	0.033	0.030	9.1	71	-0.01	8.96
39	bromochloromethane	0.184	0.185	-0.5	79	-0.01	9.21
40	tetrahydrofuran	0.088	0.073	17.0	70	0.00	9.26
41	chloroform	0.621	0.668	-7.6	86	-0.01	9.28
42	tert-Butyl Formate	0.248	0.266	-7.3	87	-0.01	9.31
43 S	dibromofluoromethane (s)	0.382	0.390	-2.1	81	0.00	9.48
44	1,1,1-trichloroethane	0.535	0.633	-18.3	93	-0.02	9.53
45	cyclohexane	0.504	0.454	9.9	73	0.00	9.61
46 I	1,4-difluorobenzene	1.000	1.000	0.0	74	-0.01	10.36
47 S	1,2-dichloroethane-d4 (s)	0.260	0.279	-7.3	87	-0.02	9.89
48	carbon tetrachloride	0.314	0.392	-24.8#	95	-0.01	9.74
49	1,1-dichloropropene	0.318	0.325	-2.2	81	-0.01	9.71
50	isopropyl acetate	0.078	0.077	1.3	76	0.00	9.92
51	benzene	0.992	0.926	6.7	74	-0.01	9.98
52	2,2,4-trimethylpentane	0.827	0.723	12.6	71	-0.01	9.99
53	tert-amyl methyl ether	0.696	0.695	0.1	79	-0.01	10.02
54	1,2-dichloroethane	0.276	0.350	-26.8#	98	-0.02	9.98
55	heptane	0.163	0.115	29.4#	59	-0.01	10.17
56	n-butyl alcohol	0.005	0.005#	0.0	73	-0.01	10.49
57	trichloroethene	0.244	0.251	-2.9	81	-0.01	10.70
58	ethyl acrylate	0.333	0.307	7.8	77	0.00	10.93
59	methyl methacrylate	0.121	0.108	10.7	71	0.00	10.98
60	1,2-dichloropropane	0.236	0.220	6.8	73	-0.01	10.96
61	methylcyclohexane	0.396	0.379	4.3	76	-0.01	10.93
62	dibromomethane	0.138	0.148	-7.2	83	0.00	11.12
63	bromodichloromethane	0.306	0.350	-14.4	88	0.00	11.26
64	2-nitropropane	0.063	0.078	-23.8#	97	0.00	11.47
65	2-chloroethyl vinyl ether	0.087	0.096	-10.3	87	-0.01	11.50
66	epichlorohydrin	0.016	0.014	12.5	73	0.00	11.63
67	cis-1,3-dichloropropene	0.378	0.381	-0.8	78	0.00	11.72
68	4-methyl-2-pantanone	0.068	0.061	10.3	69	0.00	11.82
69	3-methyl-1-butanol	0.005	0.005#	0.0	77	0.00	11.84
70	toluene	1.006	0.988	1.8	77	0.00	12.09
71	trans-1,3-dichloropropene	0.329	0.349	-6.1	84	-0.01	12.28
72	ethyl methacrylate	0.239	0.221	7.5	71	0.00	12.29
73	1,1,2-trichloroethane	0.160	0.154	3.8	75	0.00	12.49
74	2-hexanone	0.060	0.054	10.0	70	0.00	12.68
75 I	chlorobenzene-d5	1.000	1.000	0.0	76	-0.01	13.52
76 S	toluene-d8 (s)	1.114	1.140	-2.3	78	0.00	12.01
77	tetrachloroethene	0.325	0.319	1.8	77	-0.01	12.67
78	1,3-dichloropropane	0.364	0.367	-0.8	78	-0.01	12.68
79	butyl acetate	0.140	0.116	17.1	66	0.00	12.76
80	3,3-Dimethyl-1-Butanol	0.021	0.017	19.0	68	-0.01	12.84
81	dibromochloromethane	0.296	0.330	-11.5	86	0.00	12.94
82	1,2-dibromoethane	0.247	0.250	-1.2	79	-0.01	13.09
83	chlorobenzene	0.822	0.806	1.9	77	-0.01	13.56
84	1,1,1,2-tetrachloroethane	0.295	0.313	-6.1	83	0.00	13.62
85	ethylbenzene	1.378	1.360	1.3	78	-0.01	13.61
86	m,p-xylene	0.537	0.511	4.8	75	0.00	13.72
87	o-xylene	0.529	0.507	4.2	74	0.00	14.14
88	styrene	0.880	0.821	6.7	73	0.00	14.15
89	bromoform	0.196	0.204	-4.1	82	-0.01	14.41
90 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	74	0.00	15.89
91 S	4-bromofluorobenzene (s)	0.718	0.782	-8.9	80	-0.01	14.69
92	isopropylbenzene	2.501	2.520	-0.8	78	0.00	14.49
93	cyclohexanone	0.000	0.012	0.0	0#	-0.01	14.64
94	1,1,2,2-tetrachloroethane	0.578	0.540	6.6	73	-0.01	14.79

6.9.4
6

Continuing Calibration Summary

Job Number: JB37868

Sample: VI7458-CC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I184624.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

95	trans-1,4-dichloro-2-bute	0.133	0.141	-6.0	82	-0.01	14.83
96	1,2,3-trichloropropane	0.131	0.148	-13.0	87	-0.01	14.86
97	n-propylbenzene	3.008	2.933	2.5	77	-0.01	14.90
98	bromobenzene	0.689	0.688	0.1	75	0.00	14.88
99	2-chlorotoluene	0.647	0.635	1.9	77	0.00	15.05
100	4-chlorotoluene	1.958	1.890	3.5	79	-0.01	15.15
101	1,3,5-trimethylbenzene	2.191	2.241	-2.3	79	0.00	15.06
102	tert-butylbenzene	1.853	1.872	-1.0	78	-0.01	15.41
103	pentachloroethane	0.437	0.463	-5.9	81	0.00	15.49
104	1,2,4-trimethylbenzene	2.255	2.257	-0.1	78	-0.01	15.46
105	sec-butylbenzene	2.859	2.781	2.7	75	0.00	15.64
106	p-isopropyltoluene	2.404	2.359	1.9	76	0.00	15.76
107	benzyl chloride	1.115	0.990	11.2	72	0.00	16.04
108	1,3-dichlorobenzene	1.368	1.284	6.1	73	-0.01	15.83
109	1,4-dichlorobenzene	1.388	1.278	7.9	72	0.00	15.91
110	1,2-dichlorobenzene	1.297	1.245	4.0	73	0.00	16.33
111	n-butylbenzene	1.281	1.165	9.1	71	0.00	16.20
112	hexachloroethane	0.489	0.505	-3.3	80	0.00	16.61
113	1,2-dibromo-3-chloropropane	0.123	0.118	4.1	71	-0.01	17.14
114	1,3,5-Trichlorobenzene	1.089	0.954	12.4	66	-0.01	17.35
115	1,2,4-trichlorobenzene	0.939	0.804	14.4	65	-0.01	18.01
116	hexachlorobutadiene	0.588	0.589	-0.2	76	0.00	18.13
117	naphthalene	1.840	1.718	6.6	68	0.00	18.29
118	1,2,3-trichlorobenzene	0.834	0.745	10.7	66	-0.01	18.55

(#= Out of Range
I183735.D MI7422.MSPCC's out = 0 CCC's out = 0
Tue May 28 11:14:52 2013 RPT1

Continuing Calibration Summary

Page 1 of 3

Job Number: JB37868

Sample: VI7460-CC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I184656.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\VI7460\I184656.D Vial: 5
 Acq On : 28 May 2013 12:18 pm Operator: SCOTTM
 Sample : CC7422-50 Inst : MSI
 Misc : MS48829,VI7460,,,,,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MI7422.M (RTE Integrator)
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 Last Update : Tue May 21 17:53:40 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	103	-0.01	7.19
2	tertiary butyl alcohol	0.105	0.101	3.8	104	-0.02	7.30
3	iso-butyl alcohol	0.022	0.022	0.0	100	-0.01	9.98
4	1,4-dioxane	0.008	0.008#	0.0	94	-0.01	11.08
5	I pentafluorobenzene	1.000	1.000	0.0	95	-0.02	9.43
6	chlorodifluoromethane	0.364	0.509	-39.8#	139	0.00	3.78
7	dichlorodifluoromethane	0.513	0.669	-30.4#	121	0.00	3.75
8	chloromethane	0.464	0.473	-1.9	103	0.00	4.11
9	vinyl chloride	0.550	0.536	2.5	91	0.00	4.36
10	bromomethane	0.317	0.334	-5.4	110	0.00	4.99
11	chloroethane	0.219	0.229	-4.6	104	0.00	5.17
12	trichlorofluoromethane	0.569	0.834	-46.6#	137	0.00	5.63
13	ethyl ether	0.181	0.168	7.2	90	0.00	6.07
14	acrolein	0.050	0.045	10.0	90	-0.01	6.30
15	freon 113	0.245	0.278	-13.5	104	-0.01	6.45
16	1,1-dichloroethene	0.485	0.572	-17.9	110	0.00	6.47
17	acetone	0.023	0.024	-4.3	107	0.00	6.53
18	iodomethane	0.633	0.696	-10.0	99	0.00	6.75
19	carbon disulfide	1.171	1.227	-4.8	95	0.00	6.87
20	methyl acetate	0.041	0.039	4.9	88	-0.02	7.00
21	allyl chloride	0.195	0.202	-3.6	97	0.00	7.01
22	----- acetonitrile	500.000	477.727	True Calc. % Drift	4.5	97 -0.01	7.01
23	----- AvgRF	0.382	0.377	----- % Dev	1.3	96 0.00	7.20
24	methylene chloride	0.955	1.024	-7.2	103	-0.01	7.55
25	methyl tert butyl ether	0.084	0.083	1.2	92	-0.02	7.53
26	acrylonitrile	0.390	0.375	3.8	97	0.00	7.59
27	trans-1,2-dichloroethene	0.437	0.429	1.8	99	0.00	7.90
28	hexane	1.004	0.902	10.2	88	0.00	8.16
29	di-isopropyl ether	0.200	0.210	-5.0	100	-0.02	8.15
30	vinyl acetate	0.598	0.652	-9.0	102	0.00	8.16
31	1,1-dichloroethane	0.449	0.515	-14.7	106	0.00	8.27
32	chloroprene	1.047	1.061	-1.3	97	0.00	8.63
33	ethyl tert-butyl ether	0.031	0.033	-6.5	103	-0.01	8.88
34	2-butanone	0.034	0.029	14.7	86	0.00	8.90
35	ethyl acetate	0.527	0.694	-31.7#	128	-0.01	8.91
36	2,2-dichloropropane	0.406	0.403	0.7	96	-0.02	8.90
37	cis-1,2-dichloroethene	0.110	0.104	5.5	89	-0.02	9.15

6.6.5
6

Continuing Calibration Summary

Page 2 of 3

Job Number: JB37868

Sample: VI7460-CC7422

Account: AQTPAW Aquaterra Technologies, Inc.
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: I184656.D

38	propionitrile	0.033	0.033	0.0	92	-0.02	8.96
39	bromochloromethane	0.184	0.192	-4.3	97	-0.01	9.21
40	tetrahydrofuran	0.088	0.078	11.4	93	0.00	9.26
41	chloroform	0.621	0.731	-17.7	112	-0.01	9.28
42	tert-Butyl Formate	0.248	0.277	-11.7	105	-0.01	9.31
43 S	dibromofluoromethane (s)	0.382	0.381	0.3	102	0.00	9.48
44	1,1,1-trichloroethane	0.535	0.737	-37.8#	126	-0.01	9.53
45	cyclohexane	0.504	0.539	-6.9	99	-0.01	9.61
46 I	1,4-difluorobenzene	1.000	1.000	0.0	93	-0.01	10.36
47 S	1,2-dichloroethane-d4 (s)	0.260	0.295	-13.5	117	-0.02	9.89
48	carbon tetrachloride	0.314	0.473	-50.6#	131	0.00	9.74
49	1,1-dichloropropene	0.318	0.381	-19.8	108	-0.01	9.71
50	isopropyl acetate	0.078	0.071	9.0	84	-0.01	9.91
51	benzene	0.992	1.011	-1.9	94	-0.02	9.97
52	2,2,4-trimethylpentane	0.827	0.853	-3.1	93	0.00	9.99
53	tert-amyl methyl ether	0.696	0.719	-3.3	97	-0.01	10.02
54	1,2-dichloroethane	0.276	0.381	-38.0#	125	-0.01	9.99
55	heptane	0.163	0.136	16.6	78	-0.01	10.17
56	n-butyl alcohol	0.005	0.005#	0.0	88	-0.02	10.49
57	trichloroethene	0.244	0.283	-16.0	103	-0.01	10.70
58	ethyl acrylate	0.333	0.360	-8.1	102	0.00	10.93
59	methyl methacrylate	0.121	0.124	-2.5	92	-0.01	10.98
60	1,2-dichloropropane	0.236	0.235	0.4	92	-0.01	10.96
61	methylcyclohexane	0.396	0.441	-11.4	99	-0.01	10.93
62	dibromomethane	0.138	0.154	-11.6	103	-0.01	11.12
63	bromodichloromethane	0.306	0.375	-22.5#	110	-0.01	11.25
64	2-nitropropane	0.063	0.081	-28.6#	124	-0.01	11.47
65	2-chloroethyl vinyl ether	0.087	0.092	-5.7	95	-0.01	11.50
66	epichlorohydrin	0.016	0.017	-6.3	101	-0.01	11.62
67	cis-1,3-dichloropropene	0.378	0.417	-10.3	99	-0.01	11.72
68	4-methyl-2-pantanone	0.068	0.068	0.0	92	0.00	11.81
69	3-methyl-1-butanol	0.005	0.005#	0.0	94	0.00	11.84
70	toluene	1.006	1.088	-8.2	98	-0.01	12.08
71	trans-1,3-dichloropropene	0.329	0.385	-17.0	107	-0.01	12.28
72	ethyl methacrylate	0.239	0.245	-2.5	92	0.00	12.29
73	1,1,2-trichloroethane	0.160	0.161	-0.6	95	0.00	12.49
74	2-hexanone	0.060	0.060	0.0	91	0.00	12.67
75 I	chlorobenzene-d5	1.000	1.000	0.0	91	-0.01	13.52
76 S	toluene-d8 (s)	1.114	1.216	-9.2	102	-0.01	12.01
77	tetrachloroethene	0.325	0.382	-17.5	102	-0.01	12.67
78	1,3-dichloropropane	0.364	0.401	-10.2	99	-0.01	12.68
79	butyl acetate	0.140	0.127	9.3	83	0.00	12.76
80	3,3-Dimethyl-1-Butanol	0.021	0.020	4.8	89	-0.01	12.84
81	dibromochloromethane	0.296	0.365	-23.3#	109	0.00	12.94
82	1,2-dibromoethane	0.247	0.267	-8.1	96	-0.01	13.09
83	chlorobenzene	0.822	0.894	-8.8	97	0.00	13.56
84	1,1,1,2-tetrachloroethane	0.295	0.357	-21.0#	106	0.00	13.62
85	ethylbenzene	1.378	1.550	-12.5	101	-0.01	13.61
86	m,p-xylene	0.537	0.592	-10.2	98	0.00	13.72
87	o-xylene	0.529	0.575	-8.7	97	0.00	14.14
88	styrene	0.880	0.936	-6.4	93	0.00	14.15
89	bromoform	0.196	0.233	-18.9	106	-0.01	14.41
90 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	90	0.00	15.89
91 S	4-bromofluorobenzene (s)	0.718	0.797	-11.0	103	-0.01	14.69
92	isopropylbenzene	2.501	2.889	-15.5	102	0.00	14.49
93	cyclohexanone	0.000	0.063	0.0	0#	-0.01	14.64
94	1,1,2,2-tetrachloroethane	0.578	0.582	-0.7	93	-0.01	14.79

6.9.5
6

Continuing Calibration Summary

Job Number: JB37868

Sample: VI7460-CC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I184656.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

95	trans-1,4-dichloro-2-bute	0.133	0.164	-23.3#	111	-0.01	14.83
96	1,2,3-trichloropropane	0.131	0.158	-20.6#	109	-0.01	14.86
97	n-propylbenzene	3.008	3.336	-10.9	101	-0.01	14.90
98	bromobenzene	0.689	0.741	-7.5	96	0.00	14.88
99	2-chlorotoluene	0.647	0.685	-5.9	97	0.00	15.05
100	4-chlorotoluene	1.958	2.134	-9.0	103	-0.01	15.15
101	1,3,5-trimethylbenzene	2.191	2.526	-15.3	103	0.00	15.06
102	tert-butylbenzene	1.853	2.128	-14.8	102	-0.01	15.41
103	pentachloroethane	0.437	0.500	-14.4	100	0.00	15.49
104	1,2,4-trimethylbenzene	2.255	2.546	-12.9	102	-0.01	15.46
105	sec-butylbenzene	2.859	3.204	-12.1	99	0.00	15.64
106	p-isopropyltoluene	2.404	2.729	-13.5	102	0.00	15.76
107	benzyl chloride	1.115	1.377	-23.5#	114	0.00	16.04
108	1,3-dichlorobenzene	1.368	1.432	-4.7	96	-0.01	15.83
109	1,4-dichlorobenzene	1.388	1.446	-4.2	96	0.00	15.91
110	1,2-dichlorobenzene	1.297	1.369	-5.6	95	0.00	16.33
111	n-butylbenzene	1.281	1.402	-9.4	96	0.00	16.20
112	hexachloroethane	0.489	0.561	-14.7	102	0.00	16.61
113	1,2-dibromo-3-chloropropane	0.123	0.130	-5.7	95	-0.01	17.14
114	1,3,5-Trichlorobenzene	1.089	1.165	-7.0	95	-0.01	17.35
115	1,2,4-trichlorobenzene	0.939	0.973	-3.6	93	0.00	18.01
116	hexachlorobutadiene	0.588	0.683	-16.2	101	0.00	18.14
117	naphthalene	1.840	1.831	0.5	89	0.00	18.29
118	1,2,3-trichlorobenzene	0.834	0.839	-0.6	89	0.00	18.55

(#= Out of Range
I183734.D MI7422.MSPCC's out = 0 CCC's out = 0
Tue May 28 16:41:12 2013 RPT16.9.5
6



GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7458\
 Data File : I184633.D
 Acq On : 25 May 2013 6:25 am
 Operator : SCOTTM
 Sample : JB37868-1,VSL
 Misc : MS48907,VI7458,5.9,,,1
 ALS Vial : 44 Sample Multiplier: 1

Quant Time: May 28 12:16:44 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.186	65	78700	50.00	ug/L	-0.01
5) pentafluorobenzene	9.440	168	208971	50.00	ug/L	-0.01
46) 1,4-difluorobenzene	10.360	114	295536	50.00	ug/L	0.00
75) chlorobenzene-d5	13.525	117	240053	50.00	ug/L	-0.01
90) 1,4-dichlorobenzene-d4	15.889	152	128504	50.00	ug/L	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) dibromofluoromethane (s)	9.477	113	80314	50.28	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.56%
47) 1,2-dichloroethane-d4...	9.900	65	80842	52.56	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	105.12%
76) toluene-d8 (s)	12.013	98	274994	51.39	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	102.78%
91) 4-bromofluorobenzene (s)	14.686	95	98861	53.57	ug/L	-0.01
Spiked Amount	50.000	Range	66 - 132	Recovery	=	107.14%

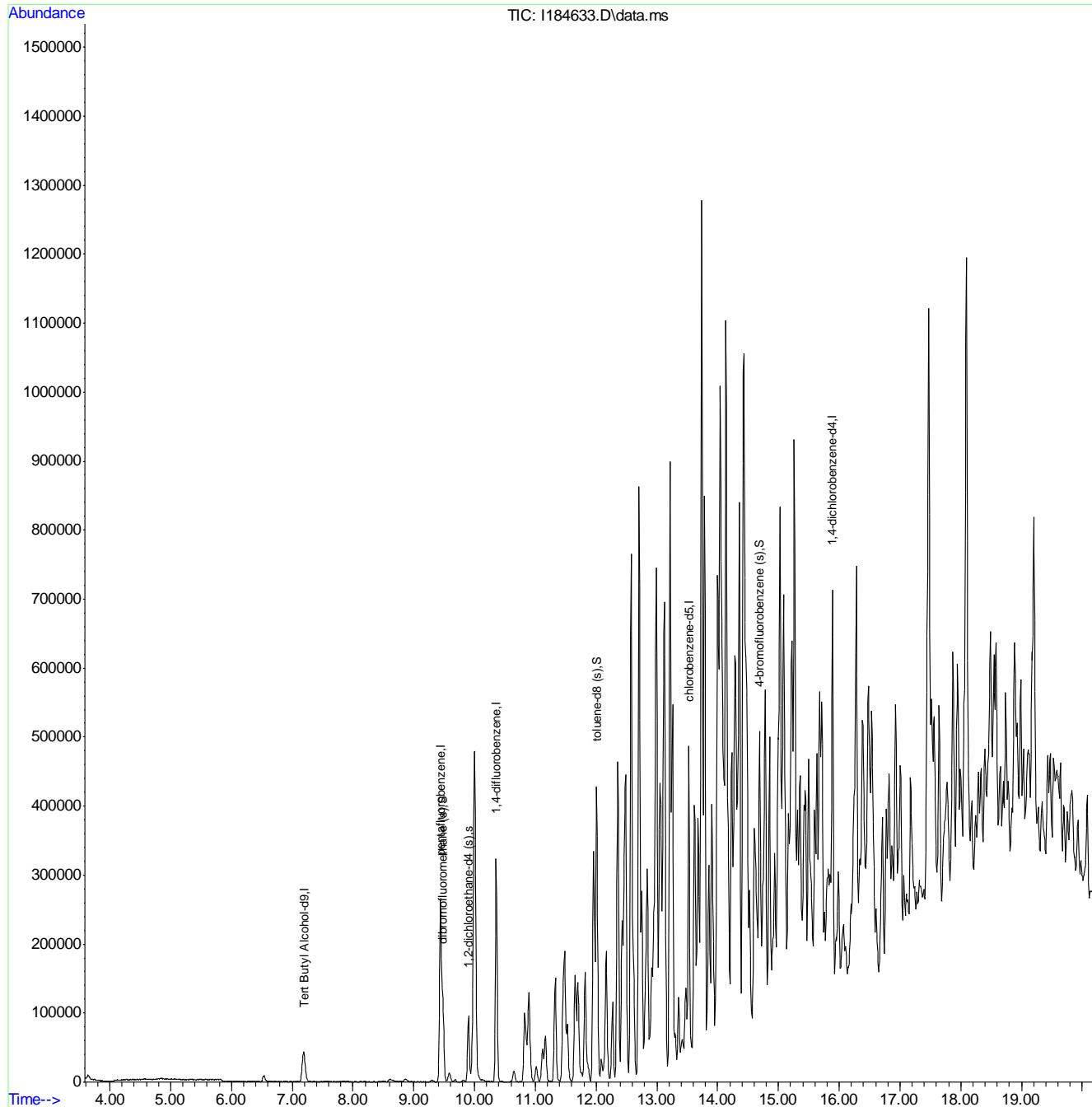
Target Compounds	Qvalue
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(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7458\
 Data File : I184633.D
 Acq On : 25 May 2013 6:25 am
 Operator : SCOTTM
 Sample : JB37868-1,VSL
 Misc : MS48907,VI7458,5.9,,,1
 ALS Vial : 44 Sample Multiplier: 1

Quant Time: May 28 12:16:44 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7460\
 Data File : I184666.D
 Acq On : 28 May 2013 6:35 pm
 Operator : SCOTTM
 Sample : JB37868-2,VSL
 Misc : MS48907,VI7460,6.3,,,1
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Jun 03 11:26:15 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.175	65	50698	50.00	ug/L	-0.02
5) pentafluorobenzene	9.440	168	197156	50.00	ug/L	-0.01
46) 1,4-difluorobenzene	10.355	114	281573	50.00	ug/L	-0.01
75) chlorobenzene-d5	13.525	117	212633	50.00	ug/L	-0.01
90) 1,4-dichlorobenzene-d4	15.884	152	97950	50.00	ug/L	-0.01

System Monitoring Compounds

43) dibromofluoromethane (s)	9.477	113	76612	50.84	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.68%
47) 1,2-dichloroethane-d4...	9.895	65	83243	56.81	ug/L	-0.02
Spiked Amount	50.000	Range	70 - 122	Recovery	=	113.62%
76) toluene-d8 (s)	12.013	98	264599	55.83	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	111.66%
91) 4-bromofluorobenzene (s)	14.686	95	86478	61.47	ug/L	-0.01
Spiked Amount	50.000	Range	66 - 132	Recovery	=	122.94%

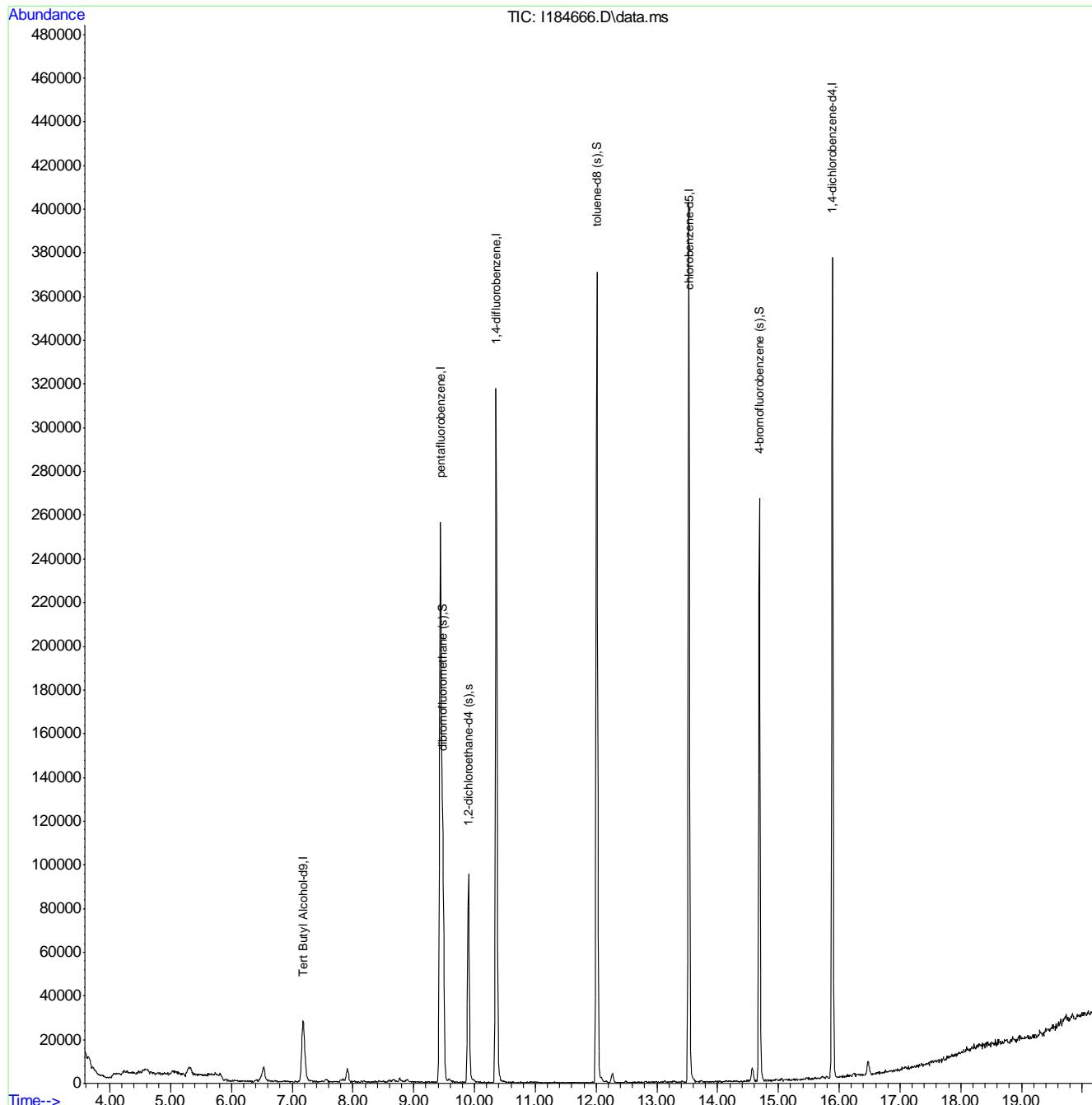
Target Compounds	Qvalue
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(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7460\
 Data File : I184666.D
 Acq On : 28 May 2013 6:35 pm
 Operator : SCOTTM
 Sample : JB37868-2,VSL
 Misc : MS48907,VI7460,6.3,,,1
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Jun 03 11:26:15 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7460\
 Data File : I184667.D
 Acq On : 28 May 2013 7:03 pm
 Operator : SCOTTM
 Sample : JB37868-3,VSL
 Misc : MS48907,VI7460,5.7,,,1
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Jun 03 11:27:58 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.180	65	58725	50.00	ug/L	-0.02
5) pentafluorobenzene	9.440	168	216510	50.00	ug/L	-0.01
46) 1,4-difluorobenzene	10.360	114	304577	50.00	ug/L	0.00
75) chlorobenzene-d5	13.525	117	246055	50.00	ug/L	-0.01
90) 1,4-dichlorobenzene-d4	15.889	152	132854	50.00	ug/L	0.00

System Monitoring Compounds

43) dibromofluoromethane (s)	9.476	113	82768	50.01	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.02%
47) 1,2-dichloroethane-d4...	9.900	65	88953	56.12	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	112.24%
76) toluene-d8 (s)	12.013	98	297524	54.25	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	108.50%
91) 4-bromofluorobenzene (s)	14.686	95	117469	61.57	ug/L	-0.01
Spiked Amount	50.000	Range	66 - 132	Recovery	=	123.14%

Target Compounds

				Qvalue
51) benzene	9.979	78	205022	33.93 ug/L 99
70) toluene	12.086	91	29320	4.78 ug/L 93
85) ethylbenzene	13.614	91	186452	27.49 ug/L 95
86) m,p-xylene	13.723	106	144600	54.76 ug/L 94
87) o-xylene	14.142	106	10509	4.03 ug/L 86
92) isopropylbenzene	14.487	105	78967	11.88 ug/L 99
101) 1,3,5-trimethylbenzene	15.057	105	245698	42.21 ug/L 98
104) 1,2,4-trimethylbenzene	15.460	105	639904	106.79 ug/L 97

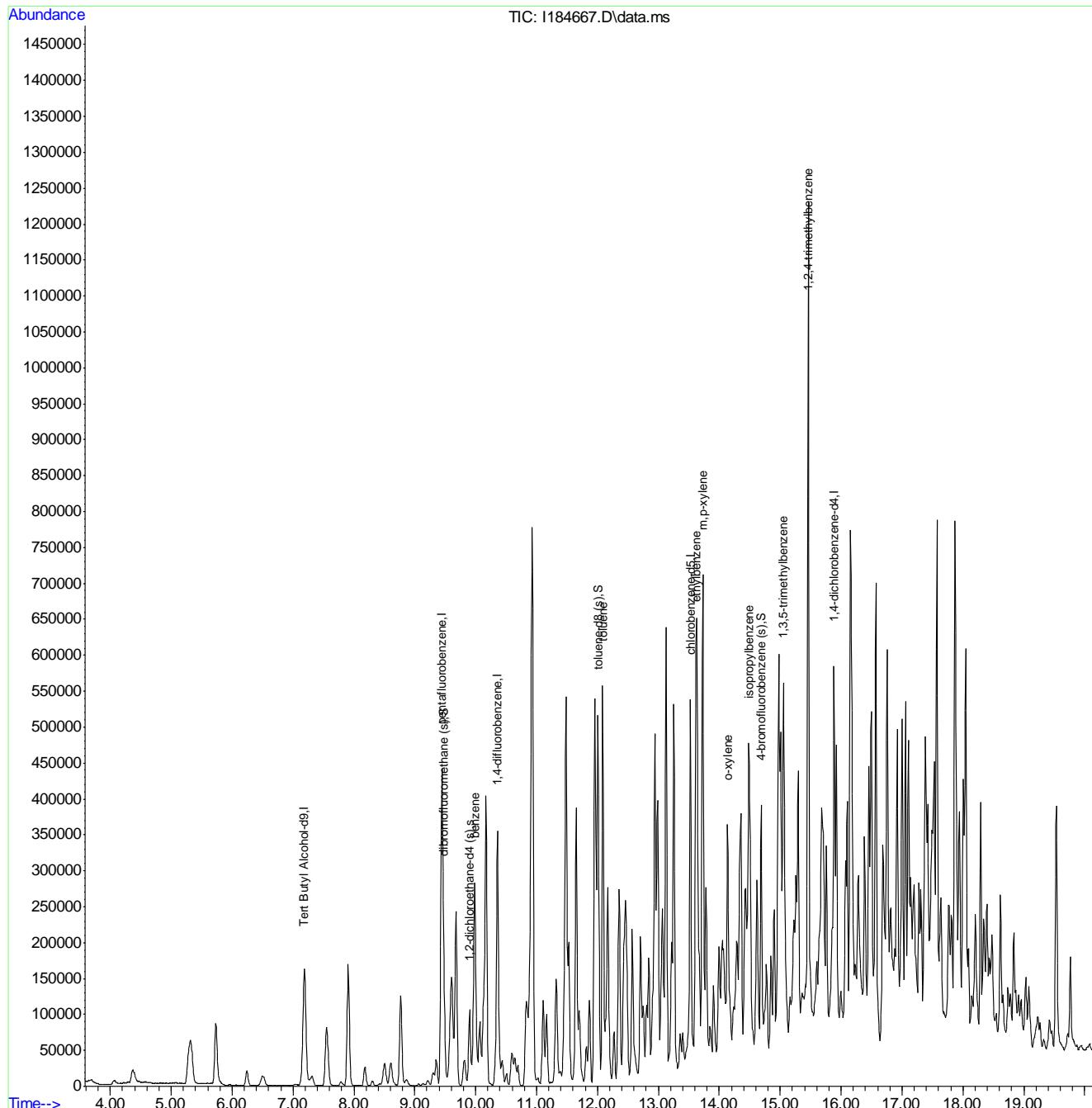
(#) = qualifier out of range (m) = manual integration (+) = signals summed

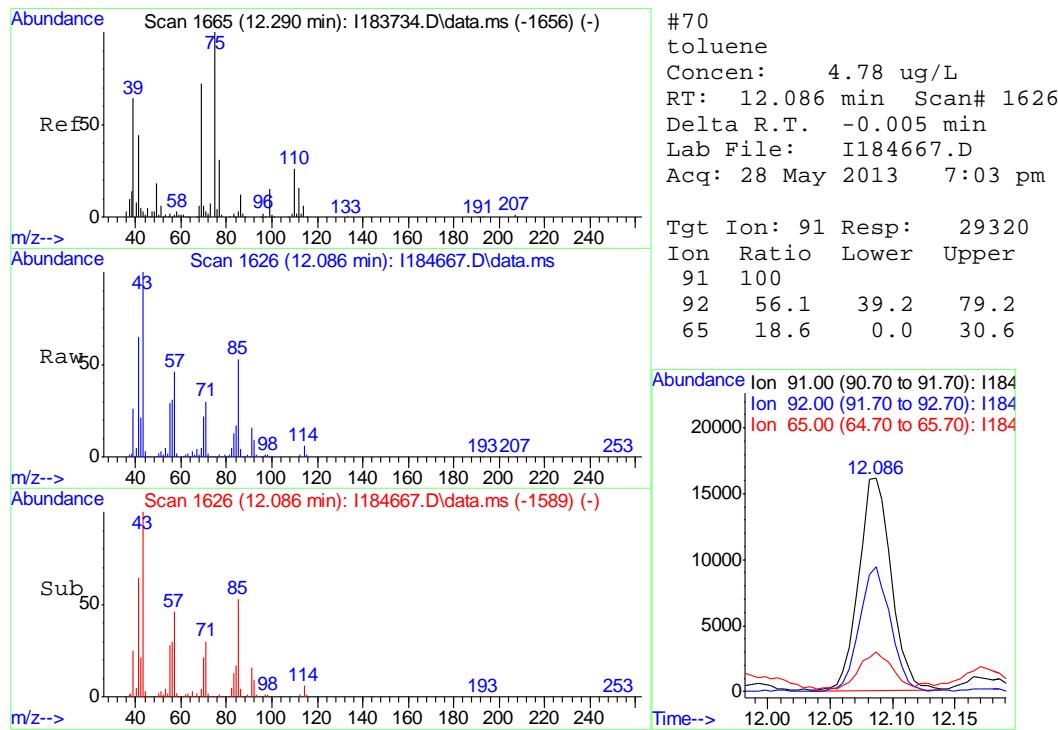
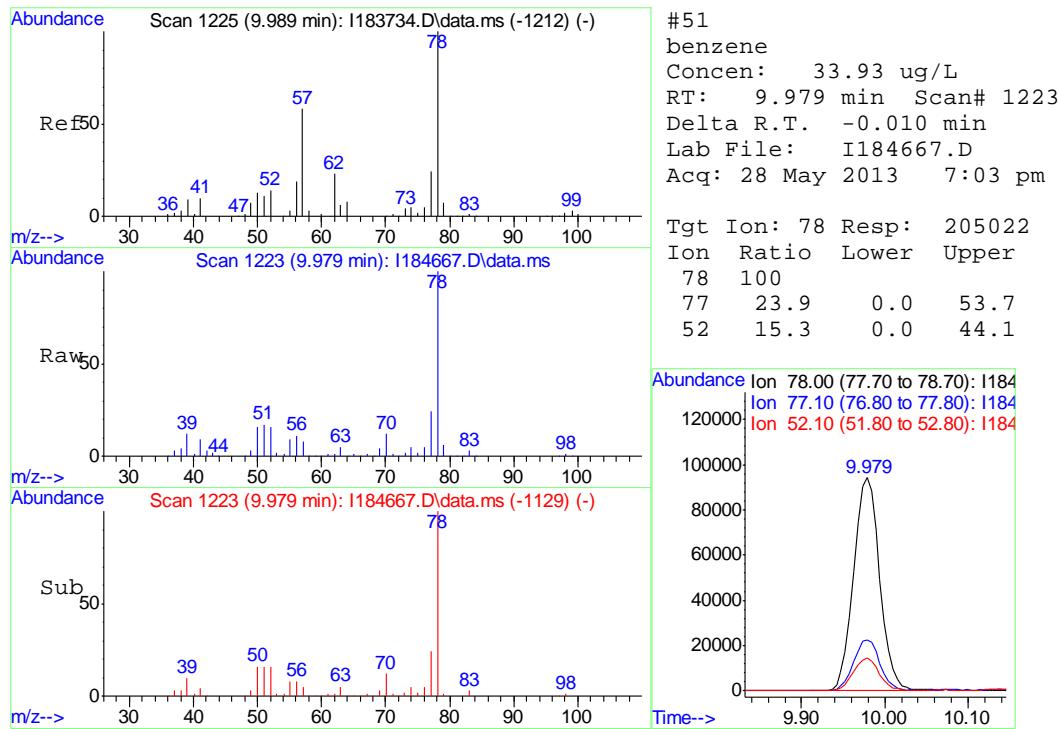
7.1.3 7

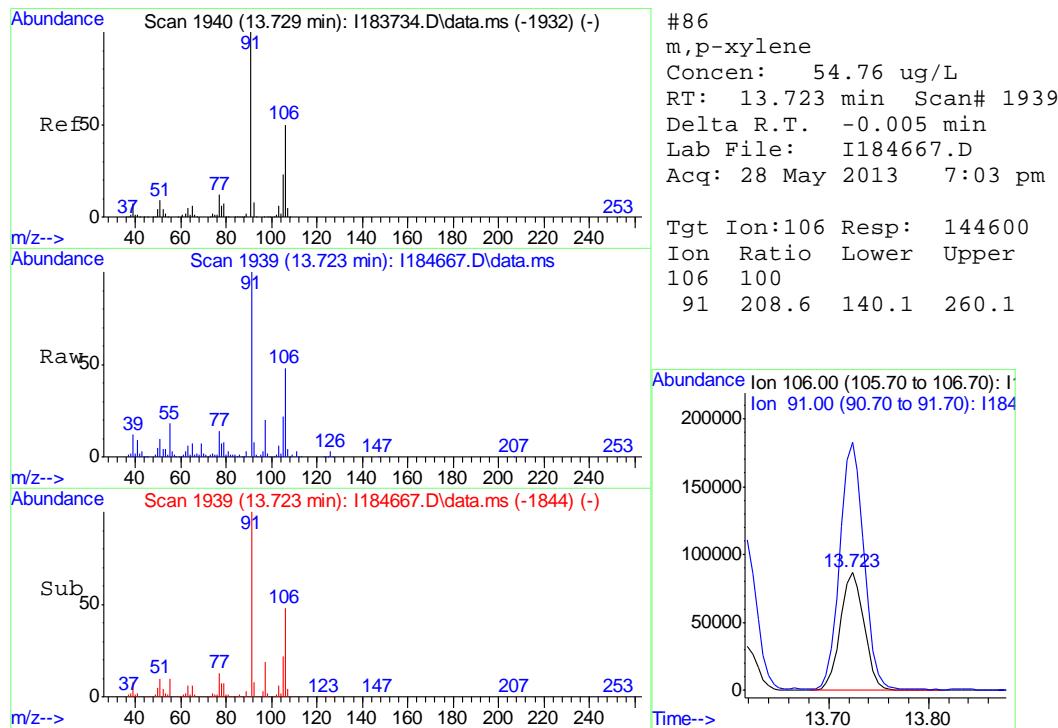
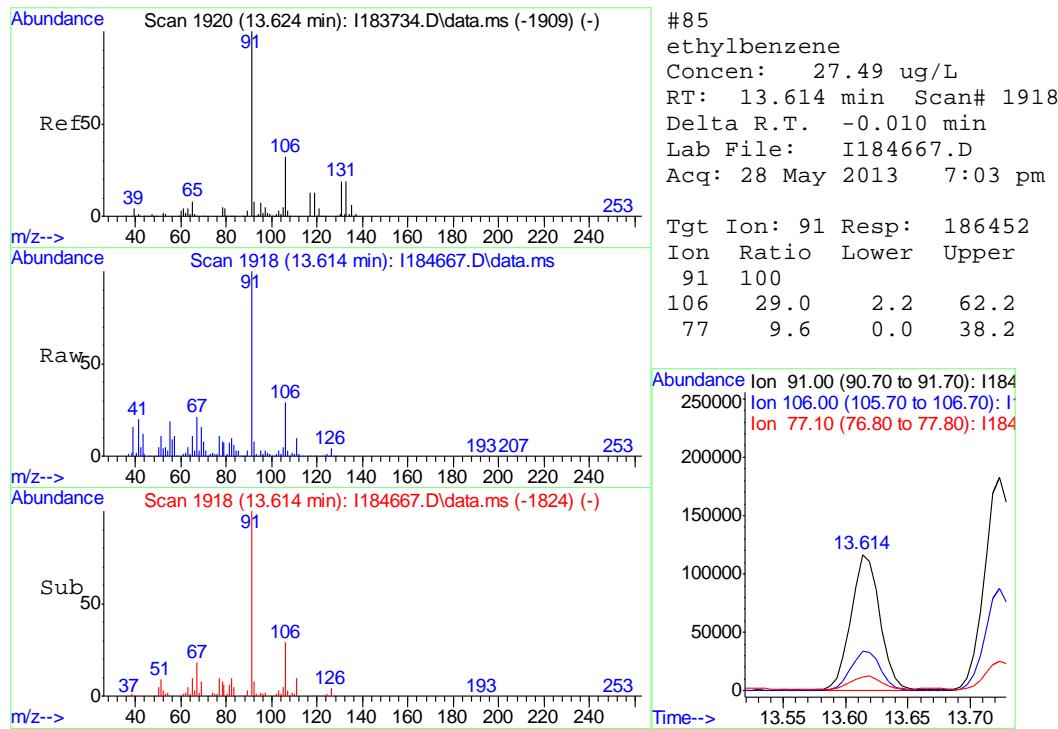
Quantitation Report (QT Reviewed)

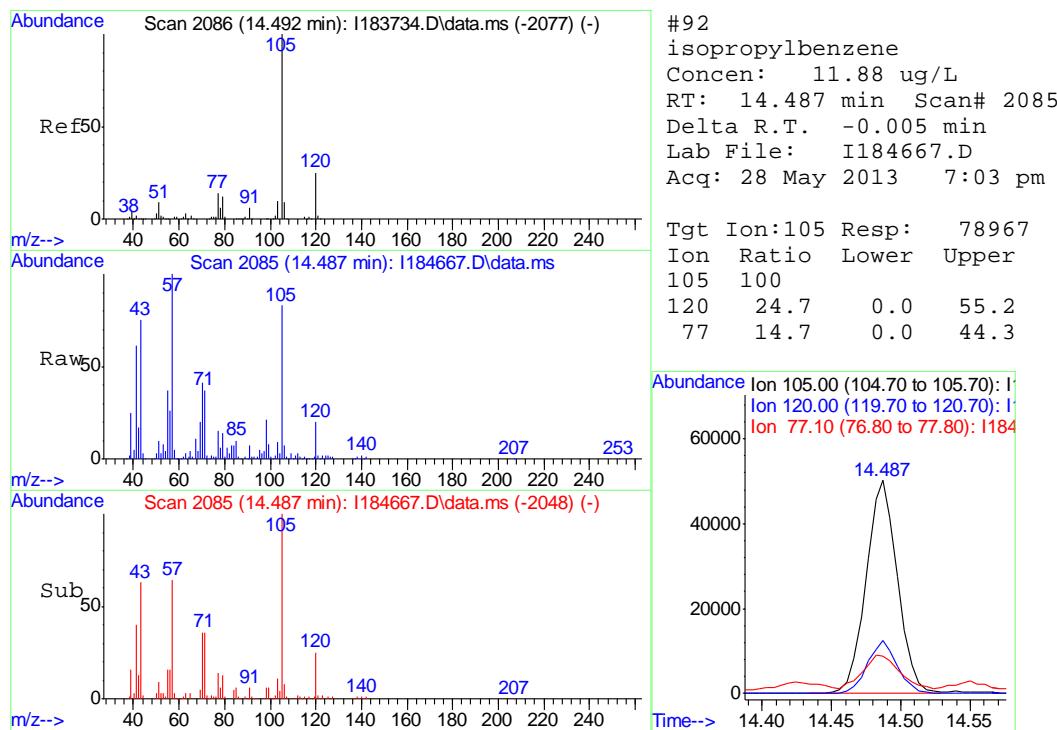
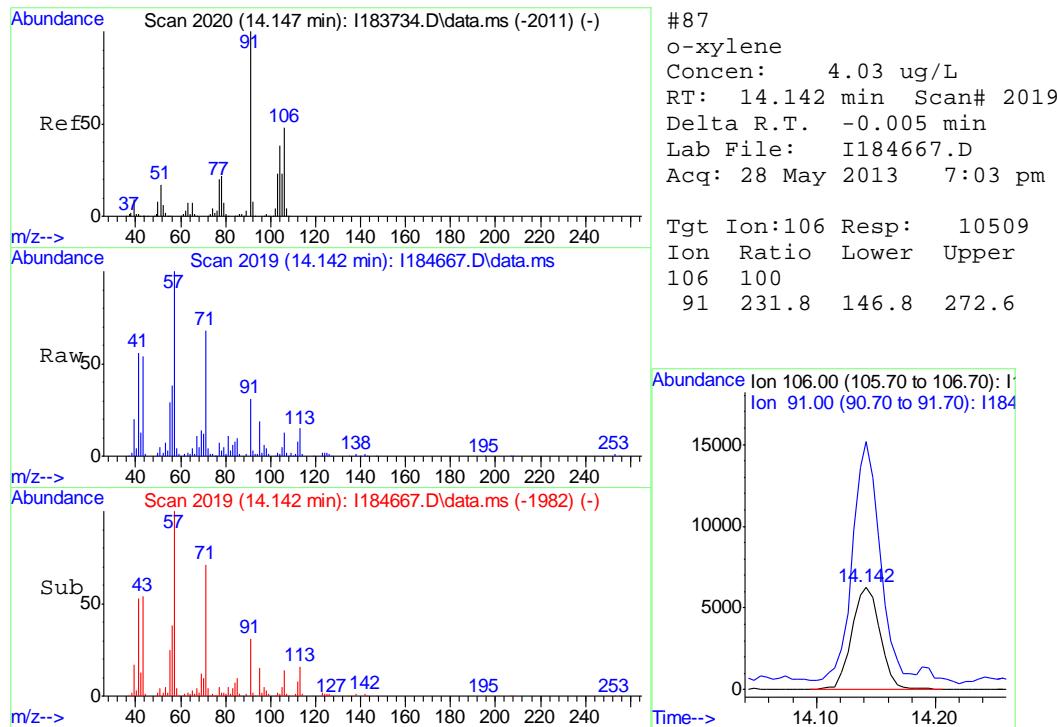
Data Path : C:\msdchem\1\DATA\VI7460\
 Data File : I184667.D
 Acq On : 28 May 2013 7:03 pm
 Operator : SCOTTM
 Sample : JB37868-3,VSL
 Misc : MS48907,VI7460,5.7,,,1
 ALS Vial : 20 Sample Multiplier: 1

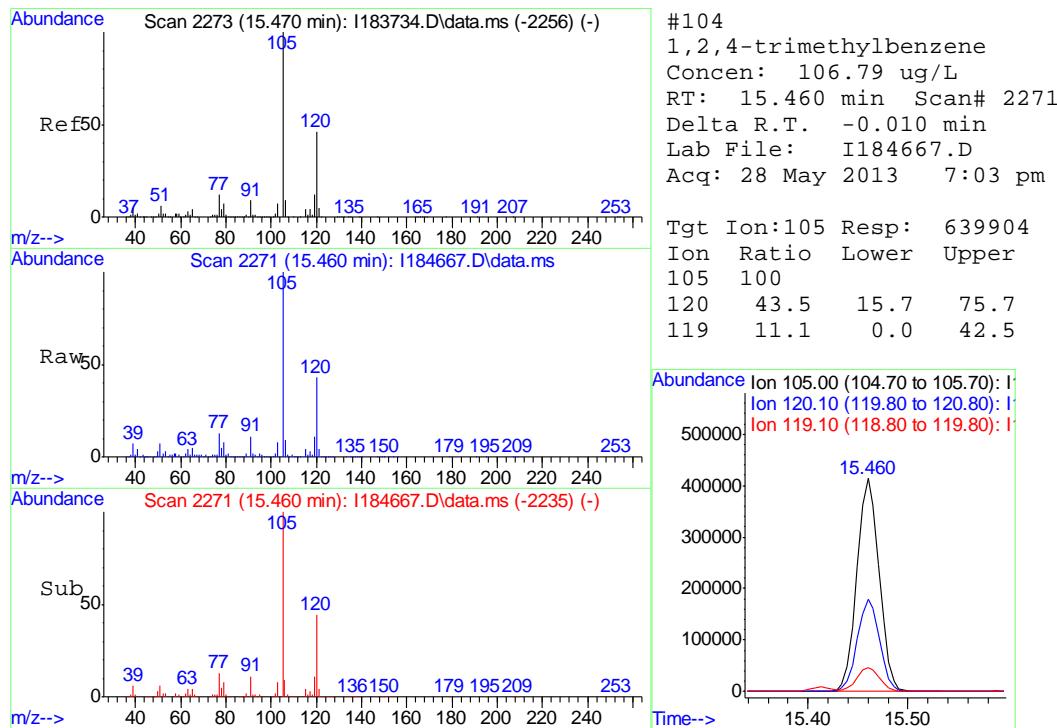
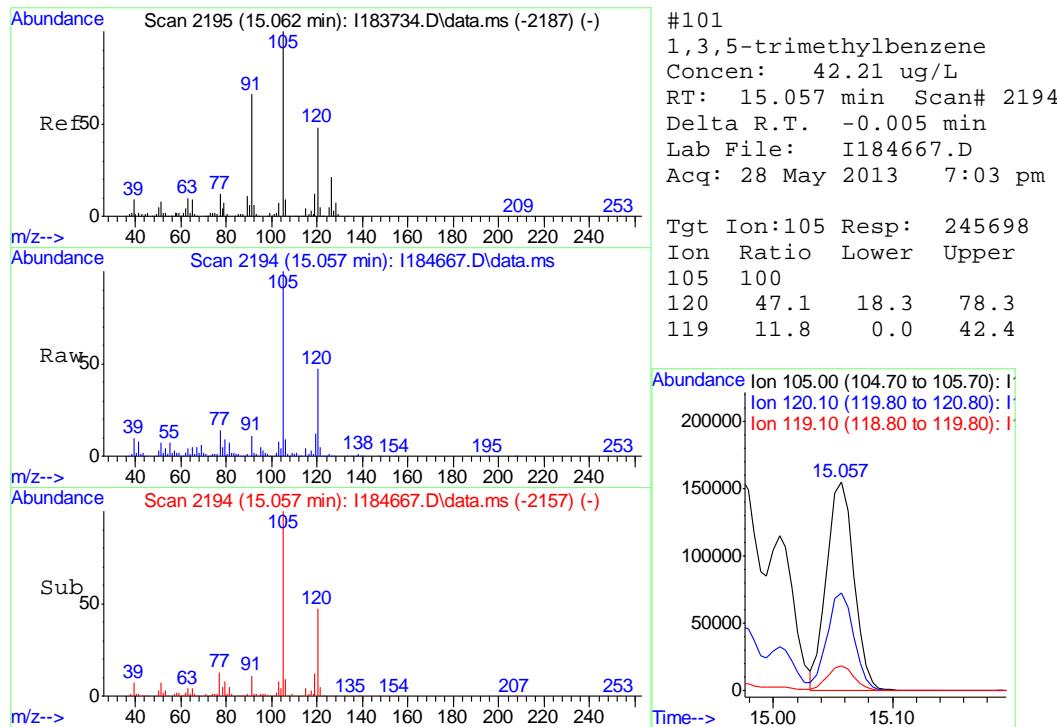
Quant Time: Jun 03 11:27:58 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration











Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7458\
 Data File : I184626.D
 Acq On : 25 May 2013 3:01 am
 Operator : SCOTTM
 Sample : MB1
 Misc : MS48910,VI7458,,,,,1
 ALS Vial : 37 Sample Multiplier: 1

Quant Time: May 28 11:17:07 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.175	65	60408	50.00	ug/L	-0.02
5) pentafluorobenzene	9.440	168	183454	50.00	ug/L	-0.01
46) 1,4-difluorobenzene	10.355	114	260273	50.00	ug/L	-0.01
75) chlorobenzene-d5	13.525	117	206518	50.00	ug/L	-0.01
90) 1,4-dichlorobenzene-d4	15.889	152	101956	50.00	ug/L	0.00

System Monitoring Compounds

43) dibromofluoromethane (s)	9.477	113	73131	52.15	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	104.30%
47) 1,2-dichloroethane-d4...	9.900	65	76055	56.15	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	112.30%
76) toluene-d8 (s)	12.013	98	236812	51.45	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	102.90%
91) 4-bromofluorobenzene (s)	14.686	95	82848	56.58	ug/L	-0.01
Spiked Amount	50.000	Range	66 - 132	Recovery	=	113.16%

Target Compounds

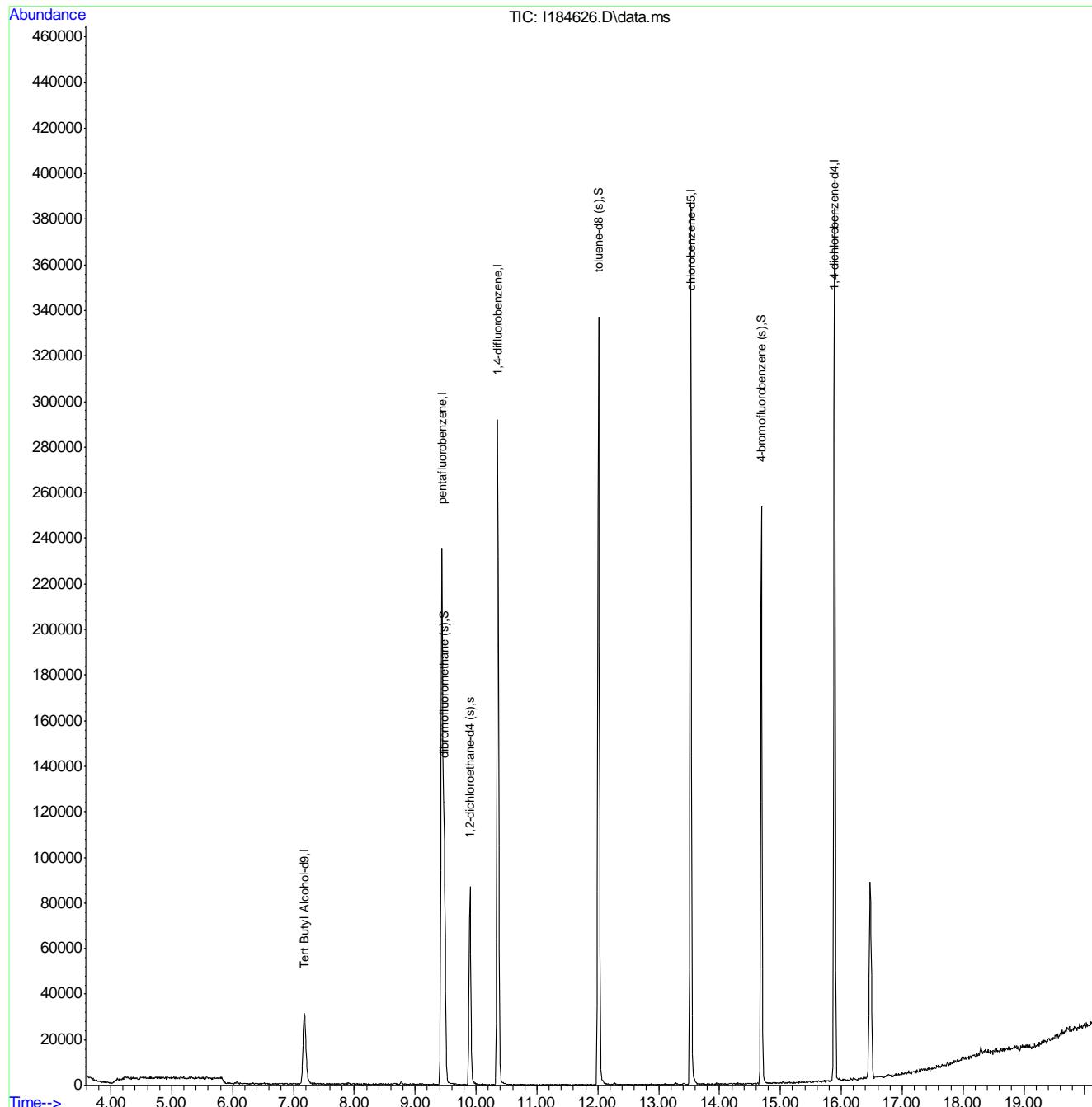
Qvalue

(#= qualifier out of range (m)= manual integration (+)= signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7458\
 Data File : I184626.D
 Acq On : 25 May 2013 3:01 am
 Operator : SCOTTM
 Sample : MB1
 Misc : MS48910,VI7458,,,,,1
 ALS Vial : 37 Sample Multiplier: 1

Quant Time: May 28 11:17:07 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7460\
 Data File : I184658.D
 Acq On : 28 May 2013 2:14 pm
 Operator : SCOTTM
 Sample : mb1
 Misc : MS48978,VI7460,,,,,1
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 28 16:42:24 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.170	65	78265	50.00	ug/L	-0.03
5) pentafluorobenzene	9.440	168	235928	50.00	ug/L	-0.01
46) 1,4-difluorobenzene	10.355	114	333682	50.00	ug/L	-0.01
75) chlorobenzene-d5	13.525	117	261046	50.00	ug/L	-0.01
90) 1,4-dichlorobenzene-d4	15.889	152	125972	50.00	ug/L	0.00

System Monitoring Compounds

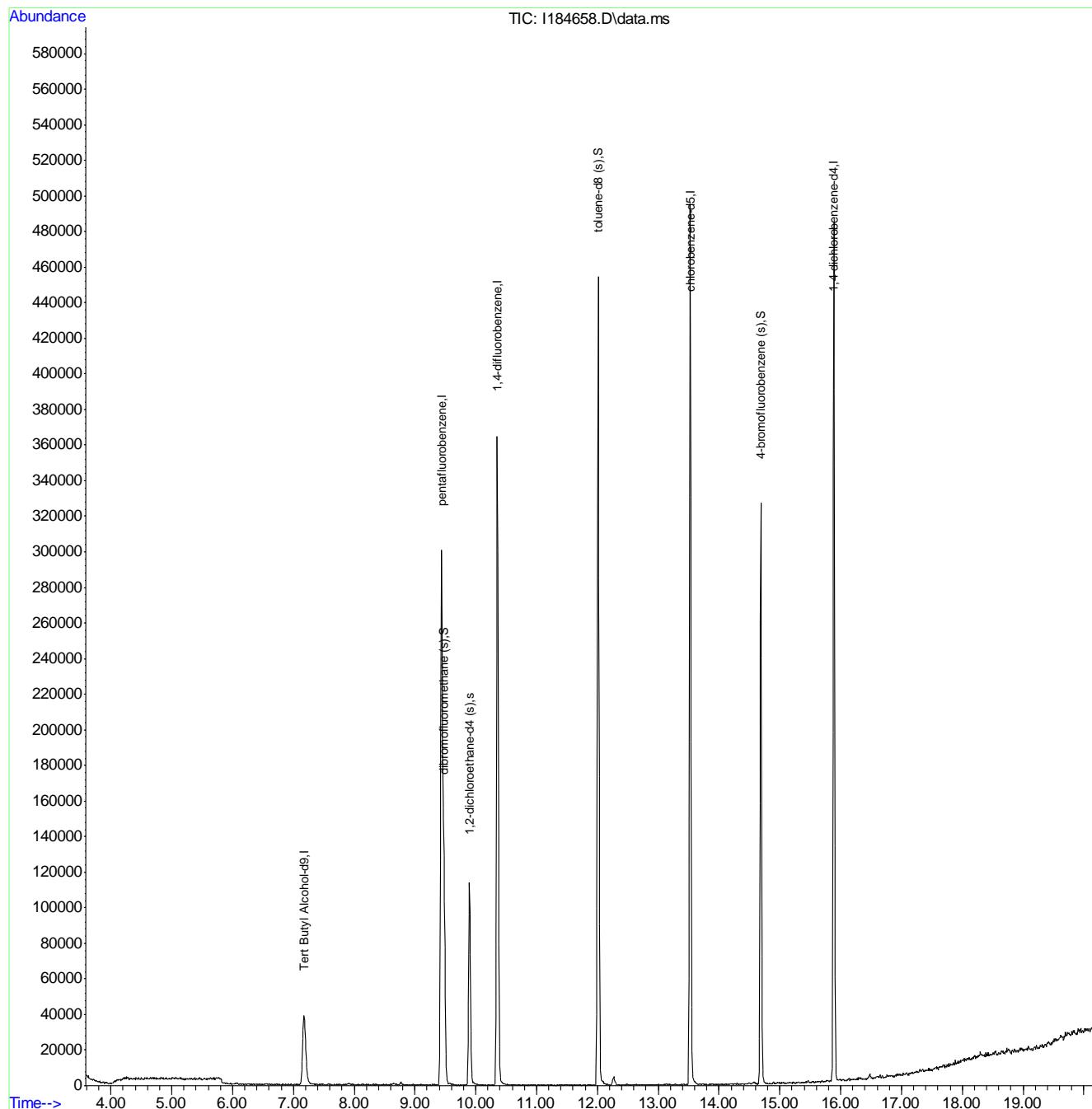
43) dibromofluoromethane (s)	9.476	113	89934	49.87	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.74%
47) 1,2-dichloroethane-d4...	9.895	65	97554	56.18	ug/L	-0.02
Spiked Amount	50.000	Range	70 - 122	Recovery	=	112.36%
76) toluene-d8 (s)	12.013	98	314981	54.13	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	108.26%
91) 4-bromofluorobenzene (s)	14.686	95	107263	59.29	ug/L	-0.01
Spiked Amount	50.000	Range	66 - 132	Recovery	=	118.58%

Target Compounds	Qvalue
(#) = qualifier out of range (m) = manual integration (+) = signals summed	

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7460\
 Data File : I184658.D
 Acq On : 28 May 2013 2:14 pm
 Operator : SCOTTM
 Sample : mb1
 Misc : MS48978,VI7460,,,,,1
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 28 16:42:24 2013
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um
 QLast Update : Tue May 21 17:53:40 2013
 Response via : Initial Calibration





Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



CHAIN OF CUSTODY

PAGE OF

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

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JB37868: Chain of Custody

Page 1 of 2

Accutest Labs of New England, Inc.



Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB37868

Client: NJ

Immediate Client Services Action Required: No

Date / Time Received: 5/25/2013

Delivery Method:

Client Service Action Required at Login: No

Project: NJ

No. Coolers: 1

Airbill #'s:

Cooler Security**Y or N****Y or N**

1. Custody Seals Present: 3. COC Present:
2. Custody Seals Intact: 4. Smpl Dates/Time OK

Cooler Temperature**Y or N**

1. Temp criteria achieved:
2. Cooler temp verification: Infared gun
3. Cooler media: Ice (bag)

Quality Control Preservation**Y or N****N/A**

1. Trip Blank present / cooler:
2. Trip Blank listed on COC:
3. Samples preserved properly:
4. VOCs headspace free:

Sample Integrity - Documentation**Y or N**

1. Sample labels present on bottles:
2. Container labeling complete:
3. Sample container label / COC agree:

Sample Integrity - Condition**Y or N**

1. Sample recvd within HT:
2. All containers accounted for:
3. Condition of sample: Intact

Sample Integrity - Instructions**Y or N****N/A**

1. Analysis requested is clear:
2. Bottles received for unspecified tests:
3. Sufficient volume recvd for analysis:
4. Compositing instructions clear:
5. Filtering instructions clear:

Comments

Accutest Laboratories
V:508.481.6200495 Technology Center West, Bldg One
F: 508.481.7753Marlborough, MA
www.accutest.com

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JB37868: Chain of Custody**Page 2 of 2**

Internal Sample Tracking Chronicle

Accutest New Jersey

Job No: JB37868

AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA
 Project No: AOI-5

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB37868-1	Collected: 23-MAY-13 10:30 By: YG	Received: 23-MAY-13 By: BA				
1 AOI-5_MW-458_4-6'_52313						
JB37868-1	SW846 8011	30-MAY-13 19:32	CZ	28-MAY-13 BJ	V8011EDB	
JB37868-1	SM21 2540 B MOD.	01-JUN-13	BF		%SOL	
JB37868-1	SW846 6010C	03-JUN-13 22:51	EAL	03-JUN-13 EM	PB	
JB37868-1	SW846 8270C	05-JUN-13 20:44	KR	04-JUN-13 SC	B8270SL	
JB37868-2	Collected: 23-MAY-13 08:45 By: YG	Received: 23-MAY-13 By: BA				
2 AOI-5_MW-455_1-2'_52313						
JB37868-2	SW846 8011	30-MAY-13 19:59	CZ	28-MAY-13 BJ	V8011EDB	
JB37868-2	SM21 2540 B MOD.	01-JUN-13	BF		%SOL	
JB37868-2	SW846 6010C	03-JUN-13 22:55	EAL	03-JUN-13 EM	PB	
JB37868-2	SW846 8270C	05-JUN-13 21:07	KR	04-JUN-13 SC	B8270SL	
JB37868-3	Collected: 23-MAY-13 10:20 By: YG	Received: 23-MAY-13 By: BA				
3 AOI-5_MW-455_10-11_052313						
JB37868-3	SW846 8011	30-MAY-13 20:26	CZ	28-MAY-13 BJ	V8011EDB	
JB37868-3	SM21 2540 B MOD.	01-JUN-13	BF		%SOL	
JB37868-3	SW846 6010C	03-JUN-13 23:08	EAL	03-JUN-13 EM	PB	
JB37868-3	SW846 8270C	05-JUN-13 21:31	KR	04-JUN-13 SC	B8270SL	

Accutest Internal Chain of Custody

Page 1 of 1

Job Number: JB37868
Account: ALNJ Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA
Received: 05/23/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB37868-1.1	Walk In Ref #5	Mehdi Abdolrahim	06/01/13 05:46	Retrieve from Storage
JB37868-1.1	Mehdi Abdolrahim	Walk In Ref #5	06/01/13 07:41	Return to Storage
JB37868-1.1	Walk In Ref #5	Eric Mensah	06/03/13 12:19	Retrieve from Storage
JB37868-1.1	Eric Mensah	Walk In Ref #5	06/03/13 12:19	Return to Storage
JB37868-1.1	Walk In Ref #5	Bijan Jafari	06/04/13 10:26	Retrieve from Storage
JB37868-1.1	Bijan Jafari	Walk In Ref #5	06/05/13 09:34	Return to Storage
JB37868-2.1	Walk In Ref #5	Mehdi Abdolrahim	06/01/13 05:46	Retrieve from Storage
JB37868-2.1	Mehdi Abdolrahim	Walk In Ref #5	06/01/13 07:41	Return to Storage
JB37868-2.1	Walk In Ref #5	Eric Mensah	06/03/13 12:19	Retrieve from Storage
JB37868-2.1	Eric Mensah	Walk In Ref #5	06/03/13 12:19	Return to Storage
JB37868-2.1	Walk In Ref #5	Bijan Jafari	06/04/13 10:26	Retrieve from Storage
JB37868-2.1	Bijan Jafari	Walk In Ref #5	06/05/13 09:34	Return to Storage
JB37868-3.1	Walk In Ref #5	Mehdi Abdolrahim	06/01/13 05:46	Retrieve from Storage
JB37868-3.1	Mehdi Abdolrahim	Walk In Ref #5	06/01/13 07:41	Return to Storage
JB37868-3.1	Walk In Ref #5	Eric Mensah	06/03/13 12:19	Retrieve from Storage
JB37868-3.1	Eric Mensah	Walk In Ref #5	06/03/13 12:19	Return to Storage
JB37868-3.1	Walk In Ref #5	Bijan Jafari	06/04/13 10:26	Retrieve from Storage
JB37868-3.1	Bijan Jafari	Walk In Ref #5	06/05/13 09:34	Return to Storage



GC/MS Semi-volatiles

QC Data Summaries

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33467-MB	R31226.D	1	06/05/13	KR	06/04/13	OP33467	MSR1136

The QC reported here applies to the following samples:

Method: SW846 8270C

JB37868-1, JB37868-2, JB37868-3

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	97	33	ug/kg	
56-55-3	Benzo(a)anthracene	ND	97	37	ug/kg	
50-32-8	Benzo(a)pyrene	ND	97	22	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	97	23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	97	44	ug/kg	
218-01-9	Chrysene	ND	97	39	ug/kg	
86-73-7	Fluorene	ND	97	34	ug/kg	
91-20-3	Naphthalene	ND	97	37	ug/kg	
85-01-8	Phenanthrene	ND	97	29	ug/kg	
129-00-0	Pyrene	ND	97	29	ug/kg	

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	48% 30-130%
4165-62-2	Phenol-d5	46% 30-130%
118-79-6	2,4,6-Tribromophenol	46% 30-130%
4165-60-0	Nitrobenzene-d5	46% 30-130%
321-60-8	2-Fluorobiphenyl	49% 30-130%
1718-51-0	Terphenyl-d14	59% 30-130%

Blank Spike Summary

Page 1 of 1

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33467-BS	R31227.D	1	06/05/13	KR	06/04/13	OP33467	MSR1136

The QC reported here applies to the following samples:

Method: SW846 8270C

JB37868-1, JB37868-2, JB37868-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
120-12-7	Anthracene	2480	1870	75	40-140
56-55-3	Benzo(a)anthracene	2480	2190	88	40-140
50-32-8	Benzo(a)pyrene	2480	1860	75	40-140
205-99-2	Benzo(b)fluoranthene	2480	2170	87	40-140
191-24-2	Benzo(g,h,i)perylene	2480	2130	86	40-140
218-01-9	Chrysene	2480	2080	84	40-140
86-73-7	Fluorene	2480	1910	77	40-140
91-20-3	Naphthalene	2480	2250	91	40-140
85-01-8	Phenanthrene	2480	1940	78	40-140
129-00-0	Pyrene	2480	1870	75	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	62%	30-130%
4165-62-2	Phenol-d5	60%	30-130%
118-79-6	2,4,6-Tribromophenol	70%	30-130%
4165-60-0	Nitrobenzene-d5	58%	30-130%
321-60-8	2-Fluorobiphenyl	65%	30-130%
1718-51-0	Terphenyl-d14	72%	30-130%

* = Outside of Control Limits.

9.2.1

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Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33467-MS	R31228.D	1	06/05/13	KR	06/04/13	OP33467	MSR1136
OP33467-MSD	R31229.D	1	06/05/13	KR	06/04/13	OP33467	MSR1136
MC21315-2	R31230.D	1	06/05/13	KR	06/04/13	OP33467	MSR1136

The QC reported here applies to the following samples:

Method: SW846 8270C

JB37868-1, JB37868-2, JB37868-3

CAS No.	Compound	MC21315-2		Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
		ug/kg	Q							
120-12-7	Anthracene	ND		2650	2020	76	2160	80	7	40-140/30
56-55-3	Benzo(a)anthracene	ND		2650	2340	88	2480	92	6	40-140/30
50-32-8	Benzo(a)pyrene	ND		2650	2010	76	2080	77	3	40-140/30
205-99-2	Benzo(b)fluoranthene	ND		2650	2400	91	2350	87	2	40-140/30
191-24-2	Benzo(g,h,i)perylene	ND		2650	2350	89	2440	90	4	40-140/30
218-01-9	Chrysene	ND		2650	2360	89	2410	89	2	40-140/30
86-73-7	Fluorene	ND		2650	2090	79	2150	80	3	40-140/30
91-20-3	Naphthalene	ND		2650	2140	81	2040	76	5	40-140/30
85-01-8	Phenanthrene	42.5	J	2650	2160	80	2280	83	5	40-140/30
129-00-0	Pyrene	ND		2650	2730	103	2240	83	20	40-140/30

CAS No.	Surrogate Recoveries	MS	MSD	MC21315-2	Limits
367-12-4	2-Fluorophenol	47%	45%	63%	30-130%
4165-62-2	Phenol-d5	51%	48%	60%	30-130%
118-79-6	2,4,6-Tribromophenol	71%	76%	71%	30-130%
4165-60-0	Nitrobenzene-d5	45%	43%	57%	30-130%
321-60-8	2-Fluorobiphenyl	60%	58%	67%	30-130%
1718-51-0	Terphenyl-d14	88%	77%	71%	30-130%

* = Outside of Control Limits.

9.3.1
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Instrument Performance Check (DFTPP)

Page 1 of 2

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSR1128-DFTPP	Injection Date:	05/30/13
Lab File ID:	R30967.D	Injection Time:	07:23
Instrument ID:	GCMSR		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	8712	39.1	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) ^a Pass
69	Mass 69 relative abundance	9649	43.3	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) ^a Pass
127	40.0 - 60.0% of mass 198	10803	48.5	Pass
197	Less than 1.0% of mass 198	91	0.41	Pass
198	Base peak, 100% relative abundance	22289	100.0	Pass
199	5.0 - 9.0% of mass 198	1599	7.17	Pass
275	10.0 - 30.0% of mass 198	5321	23.9	Pass
365	1.0 - 100.0% of mass 198	649	2.91	Pass
441	Present, but less than mass 443	2539	11.4	(85.0) ^b Pass
442	40.0 - 100.0% of mass 198	15916	71.4	Pass
443	17.0 - 23.0% of mass 442	2986	13.4	(18.8) ^c Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSR1128-ICC1128	R30970.D	05/30/13	08:31	01:08	Initial cal 50
MSR1128-IC1128	R30971.D	05/30/13	08:54	01:31	Initial cal 2
MSR1128-IC1128	R30972.D	05/30/13	09:17	01:54	Initial cal 5
MSR1128-IC1128	R30973.D	05/30/13	09:40	02:17	Initial cal 10
MSR1128-IC1128	R30974.D	05/30/13	10:03	02:40	Initial cal 20
MSR1128-IC1128	R30975.D	05/30/13	10:26	03:03	Initial cal 80
MSR1128-IC1128	R30976.D	05/30/13	10:49	03:26	Initial cal 120
MSR1128-IC1128	R30977.D	05/30/13	11:12	03:49	Initial cal 160
MSR1128-ICV1128	R30978.D	05/30/13	11:35	04:12	Initial cal verification 50
MSR1128-ICV1128	R30979.D	05/30/13	12:01	04:38	Initial cal verification 20
MSR1128-ICV1128	R30980.D	05/30/13	12:24	05:01	Initial cal verification 20
OP33361-MB	R30981.D	05/30/13	12:47	05:24	Method Blank
OP33361-BS	R30982.D	05/30/13	13:10	05:47	Blank Spike
ZZZZZZ	R30983.D	05/30/13	13:33	06:10	(unrelated sample)
OP33248-MB	R30984.D	05/30/13	13:56	06:33	Method Blank
OP33248-BS	R30985.D	05/30/13	14:19	06:56	Blank Spike
OP33248-MS	R30986.D	05/30/13	14:42	07:19	Matrix Spike
OP33248-MSD	R30987.D	05/30/13	15:05	07:42	Matrix Spike Duplicate
MC21000-8	R30988.D	05/30/13	15:28	08:05	(used for QC only; not part of job JB37868)

9.4.1
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Instrument Performance Check (DFTPP)

Page 2 of 2

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSR1128-DFTPP	Injection Date:	05/30/13
Lab File ID:	R30967.D	Injection Time:	07:23
Instrument ID:	GCMSR		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	R30989.D	05/30/13	15:51	08:28	(unrelated sample)
ZZZZZZ	R30990.D	05/30/13	16:15	08:52	(unrelated sample)
ZZZZZZ	R30991.D	05/30/13	16:38	09:15	(unrelated sample)
ZZZZZZ	R30992.D	05/30/13	17:01	09:38	(unrelated sample)
ZZZZZZ	R30993.D	05/30/13	17:24	10:01	(unrelated sample)
ZZZZZZ	R30994.D	05/30/13	17:47	10:24	(unrelated sample)
ZZZZZZ	R30995.D	05/30/13	18:10	10:47	(unrelated sample)
ZZZZZZ	R30996.D	05/30/13	18:33	11:10	(unrelated sample)
ZZZZZZ	R30997.D	05/30/13	18:56	11:33	(unrelated sample)
ZZZZZZ	R30998.D	05/30/13	19:19	11:56	(unrelated sample)
ZZZZZZ	R30999.D	05/30/13	19:42	12:19	(unrelated sample)

1.4.1
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Instrument Performance Check (DFTPP)

Page 1 of 2

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSR1136-DFTPP	Injection Date:	06/05/13
Lab File ID:	R31216.D	Injection Time:	13:23
Instrument ID:	GCMSR		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	8010	34.4	Pass
68	Less than 2.0% of mass 69	87	0.37	(0.94) ^a Pass
69	Mass 69 relative abundance	9294	40.0	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) ^a Pass
127	40.0 - 60.0% of mass 198	10891	46.8	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	23259	100.0	Pass
199	5.0 - 9.0% of mass 198	1735	7.46	Pass
275	10.0 - 30.0% of mass 198	6116	26.3	Pass
365	1.0 - 100.0% of mass 198	755	3.25	Pass
441	Present, but less than mass 443	3158	13.6	(82.0) ^b Pass
442	40.0 - 100.0% of mass 198	21621	93.0	Pass
443	17.0 - 23.0% of mass 442	3850	16.6	(17.8) ^c Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSR1136-CC1128	R31219.D	06/05/13	14:32	01:09	Continuing cal 80
ZZZZZZ	R31220.D	06/05/13	14:55	01:32	(unrelated sample)
ZZZZZZ	R31221.D	06/05/13	15:19	01:56	(unrelated sample)
ZZZZZZ	R31222.D	06/05/13	15:42	02:19	(unrelated sample)
ZZZZZZ	R31223.D	06/05/13	16:05	02:42	(unrelated sample)
OP33353-MB	R31224.D	06/05/13	16:28	03:05	Method Blank
OP33353-BS	R31225.D	06/05/13	16:52	03:29	Blank Spike
OP33467-MB	R31226.D	06/05/13	17:15	03:52	Method Blank
OP33467-BS	R31227.D	06/05/13	17:38	04:15	Blank Spike
OP33467-MS	R31228.D	06/05/13	18:01	04:38	Matrix Spike
OP33467-MSD	R31229.D	06/05/13	18:24	05:01	Matrix Spike Duplicate
MC21315-2	R31230.D	06/05/13	18:47	05:24	(used for QC only; not part of job JB37868)
ZZZZZZ	R31231.D	06/05/13	19:10	05:47	(unrelated sample)
ZZZZZZ	R31232.D	06/05/13	19:34	06:11	(unrelated sample)
ZZZZZZ	R31233.D	06/05/13	19:57	06:34	(unrelated sample)
ZZZZZZ	R31234.D	06/05/13	20:20	06:57	(unrelated sample)
JB37868-1	R31235.D	06/05/13	20:44	07:21	1 AOI-5_MW-458_4-6'_52313
JB37868-2	R31236.D	06/05/13	21:07	07:44	2 AOI-5_MW-455_1-2'_52313
JB37868-3	R31237.D	06/05/13	21:31	08:08	3 AOI-5_MW-455_10-11_052313

Instrument Performance Check (DFTPP)

Page 2 of 2

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSR1136-DFTPP	Injection Date:	06/05/13
Lab File ID:	R31216.D	Injection Time:	13:23
Instrument ID:	GCMSR		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	R31238.D	06/05/13	21:55	08:32	(unrelated sample)
OP33353-MS	R31239.D	06/05/13	22:19	08:56	Matrix Spike
OP33353-MSD	R31240.D	06/05/13	22:43	09:20	Matrix Spike Duplicate
MC21000-27	R31241.D	06/05/13	23:08	09:45	(used for QC only; not part of job JB37868)
ZZZZZZ	R31242.D	06/05/13	23:32	10:09	(unrelated sample)
ZZZZZZ	R31243.D	06/05/13	23:57	10:34	(unrelated sample)
ZZZZZZ	R31244.D	06/06/13	00:22	10:59	(unrelated sample)
ZZZZZZ	R31245.D	06/06/13	00:46	11:23	(unrelated sample)
ZZZZZZ	R31246.D	06/06/13	01:10	11:47	(unrelated sample)

9.4.2
9

Semivolatile Internal Standard Area Summary

Page 1 of 2

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	MSR1136-CC1128	Injection Date:	06/05/13
Lab File ID:	R31219.D	Injection Time:	14:32
Instrument ID:	GCMSR	Method:	SW846 8270C

	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
Check Std	43091	4.11	175510	5.16	103003	6.69	185035	8.07	212754	11.02	203026	12.61
Upper Limit ^a	86182	4.61	351020	5.66	206006	7.19	370070	8.57	425508	11.52	406052	13.11
Lower Limit ^b	21546	3.61	87755	4.66	51502	6.19	92518	7.57	106377	10.52	101513	12.11

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
ZZZZZZ	42299	4.11	166435	5.15	99348	6.68	178192	8.07	207309	11.01	202416	12.61
ZZZZZZ	44562	4.11	172506	5.15	105883	6.68	190520	8.07	221875	11.02	217031	12.61
ZZZZZZ	50751	4.11	198767	5.15	123893	6.68	215062	8.07	256545	11.02	253720	12.61
ZZZZZZ	48373	4.11	193391	5.16	119774	6.69	210246	8.07	253225	11.02	246488	12.61
OP3353-MB	40067	4.11	156543	5.15	94659	6.68	169675	8.07	198384	11.01	195931	12.61
OP3353-BS	40427	4.11	158670	5.16	96508	6.68	172741	8.07	246972	11.02	198247	12.61
OP33467-MB	55168	4.11	214974	5.15	129379	6.68	228949	8.07	275927	11.02	260339	12.61
OP33467-BS	38850	4.11	155702	5.15	93714	6.68	169222	8.07	200438	11.02	196178	12.61
OP33467-MS	41052	4.11	161072	5.15	96226	6.68	169045	8.07	194801	11.02	197099	12.61
OP33467-MSD	51427	4.11	206980	5.16	124009	6.68	215592	8.07	243994	11.02	249790	12.62
MC21315-2	48844	4.11	191682	5.15	115216	6.68	202351	8.07	233497	11.02	241505	12.61
ZZZZZZ	37668	4.11	144672	5.15	88329	6.68	157816	8.07	253635	11.07	271219	12.77
ZZZZZZ	50905	4.11	197659	5.15	117219	6.68	207194	8.07	239940	11.02	246812	12.61
ZZZZZZ	44771	4.11	174520	5.15	105672	6.68	185988	8.07	206794	11.02	209308	12.61
ZZZZZZ	41253	4.11	158646	5.15	95677	6.68	171343	8.07	197339	11.02	202260	12.61
JB37868-1	46154	4.11	177998	5.15	104210	6.68	183591	8.07	205172	11.02	211597	12.61
JB37868-2	45072	4.11	176593	5.15	103167	6.68	179233	8.07	204912	11.02	217406	12.61
JB37868-3	48045	4.11	184866	5.16	110353	6.68	193141	8.07	221651	11.02	223742	12.61
ZZZZZZ	44279	4.11	172863	5.16	104411	6.69	181038	8.07	201756	11.02	205497	12.61
OP3353-MS	38014	4.11	149175	5.16	90271	6.69	164077	8.07	202516	11.02	204552	12.61
OP3353-MSD	42300	4.11	165402	5.16	102160	6.69	183755	8.07	212010	11.02	204855	12.61
MC21000-27	43484	4.11	172788	5.16	106663	6.68	193433	8.07	226868	11.02	224049	12.61
ZZZZZZ	38460	4.11	146073	5.16	85407	6.69	157277	8.07	200580	11.03	182556	12.62
ZZZZZZ	45630	4.11	184194	5.16	113799	6.69	206806	8.07	234360	11.02	211659	12.61
ZZZZZZ	44711	4.11	179118	5.16	112311	6.69	201052	8.07	230880	11.02	213893	12.61
ZZZZZZ	49174	4.11	196384	5.16	121426	6.69	217839	8.07	246319	11.02	227007	12.61
ZZZZZZ	42814	4.11	169997	5.16	105192	6.69	193437	8.07	229568	11.02	214710	12.61

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

Semivolatile Internal Standard Area Summary

Page 2 of 2

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	MSR1136-CC1128	Injection Date:	06/05/13
Lab File ID:	R31219.D	Injection Time:	14:32
Instrument ID:	GCMSR	Method:	SW846 8270C

Lab	IS 1	IS 2	IS 3	IS 4	IS 5	IS 6
Sample ID	AREA	RT	AREA	RT	AREA	RT

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

9.5.1

9

Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8270C

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
JB37868-1	R31235.D	51.0	55.0	66.0
JB37868-2	R31236.D	47.0	57.0	60.0
JB37868-3	R31237.D	48.0	53.0	63.0
OP33467-BS	R31227.D	58.0	65.0	72.0
OP33467-MB	R31226.D	46.0	49.0	59.0
OP33467-MS	R31228.D	45.0	60.0	88.0
OP33467-MSD	R31229.D	43.0	58.0	77.0

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

9.6.1
6

Initial Calibration Summary

Job Number: JB37868

Sample: MSR1128-ICC1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30970.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Response Factor Report MSR

Method : C:\msdchem\1\met...\\R130530_8270+.m (RTE Integrator)
 Title : SW-864 Method 8270
 Last Update : Thu May 30 14:53:36 2013
 Response via : Initial Calibration

Calibration Files

160 =R30977.D	120 =R30976.D	80 =R30975.D	20 =R30974.D
5 =R30972.D	2 =R30971.D	10 =R30973.D	50 =R30970.D

Compound	160	120	80	20	5	2	10	50	Avg	%RSD
<hr/>										
1) I 1,4-Dichlorobenzene-d						-----ISTD-----				
2) N-nitrosodim	0.804	0.758	0.796	0.844	0.808		0.825	0.807	0.806	3.31
3) Pyridine	1.452	1.367	1.453	1.536	1.436		1.445	1.492	1.455	3.57
4) Aniline		0.735	0.804	0.829	0.848	0.835	0.829	0.790	0.810	4.76
5) 2-Fluorophen	1.324	1.295	1.322	1.391	1.282	1.275	1.296	1.286	1.309	2.89
6) bis(2-Chloro	0.982	0.966	1.006	1.049	1.022	0.999	1.047	1.020	1.011	2.89
7) Phenol-d5	1.714	1.664	1.688	1.757	1.612	1.614	1.694	1.716	1.683	3.00
8) Phenol	1.887	1.832	1.742	1.759	1.693	1.635	1.723	1.772	1.755	4.47
9) 2-Chlorophen	1.458	1.415	1.465	1.483	1.452	1.412	1.447	1.467	1.450	1.73
10) 1,3-Dichloro	1.556	1.498	1.555	1.580	1.542	1.569	1.587	1.584	1.559	1.87
11) 1,4-Dichloro	1.635	1.591	1.644	1.626	1.646	1.608	1.671	1.649	1.634	1.53
12) 1,2-Dichloro	1.502	1.438	1.494	1.478	1.505	1.438	1.516	1.518	1.486	2.17
13) Benzyl alcoh	0.825	0.791	0.814	0.790	0.707		0.700	0.817	0.778	6.76
14) bis(2-chloro	1.514	1.494	1.576	1.570	1.678	1.607	1.642	1.653	1.592	4.13
15) o-cresol	1.242	1.206	1.256	1.271	1.272	1.127	1.318	1.324	1.252	5.07
16) Acetophenone	1.980	1.910	1.927	1.940	1.976	1.991	1.971	2.018	1.964	1.83
17) Hexachloroet	0.616	0.589	0.611	0.584	0.596	0.590	0.605	0.628	0.602	2.56
18) N-Nitroso-di	0.962	0.920	0.974	0.951	0.936	0.978	0.974	1.005	0.963	2.74
19) m+p-cresols	1.362	1.308	1.330	1.321	1.321	1.274	1.364	1.383	1.333	2.65
20) 4-methylphen	1.362	1.308	1.330	1.321	1.321	1.274	1.364	1.383	1.333	2.65
<hr/>										
21) I 1,4-Dichlorobenzene-d						-----ISTD-----				
22) Benzaldehyde	3.741	3.832	3.823	3.758			3.802	3.789	3.791	0.94
<hr/>										
23) I Naphthalene-d8						-----ISTD-----				
24) Nitrobenzene	0.394	0.392	0.400	0.405	0.388	0.399	0.411	0.397	0.398	1.83
25) Nitrobenzene	0.391	0.383	0.400	0.400	0.401	0.391	0.413	0.399	0.397	2.20
26) Isophorone	0.679	0.668	0.693	0.694	0.689	0.702	0.721	0.707	0.694	2.38
27) 2-Nitropheno	0.202	0.196	0.201	0.201	0.184		0.196	0.202	0.197	3.23
28) 2,4-Dimethyl	0.371	0.360	0.377	0.382	0.367		0.397	0.377	0.376	3.14
29) bis(2-Chloro	0.408	0.394	0.411	0.405	0.407		0.429	0.415	0.410	2.56
30) Benzoic acid	0.295	0.283	0.285	0.241			0.206	0.282	0.265	13.07
31) 2,4-Dichloro	0.319	0.306	0.314	0.315	0.305		0.311	0.322	0.313	2.05
32) 1,2,4-Trichl	0.336	0.327	0.337	0.343	0.341	0.350	0.353	0.337	0.341	2.40
33) Naphthalene	1.070	1.054	1.072	1.072	1.065	1.062	1.115	1.089	1.075	1.78
34) 2,6-Dichloro	0.311	0.302	0.312	0.311	0.309		0.317	0.315	0.311	1.62
35) 4-Chloroanil	0.456	0.441	0.457	0.453	0.443		0.472	0.465	0.455	2.41
36) Hexachlorobu	0.198	0.196	0.204	0.205	0.201	0.200	0.205	0.205	0.202	1.75
37) 4-Chloro-3-m	0.315	0.304	0.304	0.297	0.313		0.313	0.317	0.309	2.37
38) 2-Methylnaph	0.720	0.710	0.699	0.709	0.790	0.728	0.745	0.741	0.730	3.94
39) 1-Methylnaph	0.695	0.680	0.675	0.690	0.732	0.738	0.717	0.701	0.704	3.30
40) 1,2,4,5-Tetr	0.367	0.364	0.362	0.379	0.399	0.387	0.398	0.373	0.378	3.90
<hr/>										
41) I Naphthalene-d8a						-----ISTD-----				
42) Caprolactam	0.125	0.120	0.107	0.082			0.100	0.112	0.108	14.21

Initial Calibration Summary

Job Number: JB37868

Sample: MSR1128-ICC1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30970.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

43)	I	Acenaphthene-d10	-----ISTD-----							
44)	Pentachloron	0.191 0.184 0.181 0.180		0.165	0.183	0.181		4.79		
45)	Hexachlorocyclo	0.389 0.373 0.375 0.356 0.317		0.353	0.388	0.364		6.90		
46)	2,4,6-Trichloro	0.416 0.399 0.387 0.406 0.393		0.413	0.422	0.405		3.14		
47)	2,4,5-Trichloro	0.450 0.423 0.403 0.412 0.405		0.428	0.450	0.424		4.62		
48)	2-Fluorobiphenyl	1.439 1.394 1.312 1.428 1.371	1.388	1.489	1.441	1.408		3.82		
49)	2-Chloronaphthalene	1.166 1.130 1.093 1.161 1.136	1.155	1.217	1.198	1.157		3.37		
50)	Acenaphthylene	1.884 1.832 1.799 1.906 1.905	1.814	1.966	1.931	1.880		3.15		
51)	Dimethylphthalate	1.387 1.331 1.293 1.363 1.362	1.350	1.422	1.414	1.365		3.13		
52)	2,4-Dinitrotoluene	0.413 0.396 0.418 0.400 0.374		0.400	0.426	0.404		4.24		
53)	Acenaphthene	1.234 1.208 1.247 1.248 1.269	1.233	1.307	1.267	1.252		2.37		
54)	2,4-Dinitrophenol	0.220 0.203 0.206 0.160			0.205	0.199		11.55		
55)	Dibenzofuran	1.707 1.654 1.737 1.731 1.744	1.675	1.758	1.760	1.721		2.26		
56)	2,6-Dinitrotoluene	0.323 0.307 0.305 0.306 0.284		0.307	0.329	0.309		4.68		
57)	4-Nitrophenoxy	0.281 0.255 0.272 0.267		0.248	0.271	0.266		4.51		
58)	2,3,4,6-Tetrahydrophenol	0.374 0.357 0.366 0.349 0.325		0.357	0.370	0.357		4.64		
59)	Fluorene	1.370 1.327 1.389 1.397 1.391	1.386	1.398	1.398	1.382		1.73		
60)	4-Chlorophenol	0.678 0.660 0.689 0.695 0.693	0.690	0.714	0.697	0.690		2.26		
61)	Diethylphthalate	1.311 1.269 1.335 1.333 1.362	1.301	1.388	1.345	1.330		2.78		
62)	2-nitroaniline	0.418 0.399 0.390 0.406 0.373	0.332	0.393	0.426	0.392		7.53		
63)	3-nitroaniline	0.347 0.334 0.336 0.346		0.351	0.359	0.346		2.62		
64)	4-nitroaniline	0.343 0.335 0.358 0.349		0.344	0.357	0.348		2.54		
65)	Acenaphthene-d10a	-----ISTD-----								
66)	1,1'-Biphenyl	1.451 1.416 1.397 1.441 1.351	1.414	1.411	1.412			2.29		
67)	I	Phenanthrene-d10	-----ISTD-----							
68)	4,6-Dinitrophenol	0.153 0.153 0.157 0.138		0.141	0.163	0.151		6.26		
69)	n-Nitrosodiphenylamine	0.548 0.560 0.572 0.587 0.569	0.559	0.674	0.604	0.584		6.90		
70)	1,2-Diphenylhydrazine	0.837 0.836 0.868 0.780 0.885	0.877	0.901	0.921	0.863		5.14		
71)	2,4,6-Tribromophenol	0.131 0.127 0.123 0.125 0.117		0.143	0.134	0.129		6.67		
72)	4-Bromophenol	0.240 0.229 0.239 0.244 0.232	0.253	0.272	0.248	0.245		5.52		
73)	Hexachlorobenzene	0.255 0.244 0.254 0.255 0.258	0.256	0.296	0.266	0.261		5.93		
74)	Pentachlorophenol	0.183 0.177 0.171 0.159		0.141	0.176	0.168		9.08		
75)	Phenanthrene	1.157 1.152 1.163 1.181 1.185	1.195	1.198	1.211	1.180		1.79		
76)	Anthracene	1.219 1.198 1.220 1.246 1.216	1.188	1.258	1.275	1.228		2.44		
77)	Carbazole	1.080 1.084 1.114 1.100 1.092	1.040	1.140	1.147	1.100		3.15		
78)	Di-n-butylphthalate	1.274 1.324 1.352 1.346 1.114		1.382	1.389	1.311		7.27		
79)	Fluoranthene	1.291 1.112 1.268 1.324 1.047	1.216	1.290	1.101	1.206		8.70		
80)	I	Phenanthrene-d10a	-----ISTD-----							
81)	Atrazine	0.199 0.198 0.184 0.158		0.178	0.195	0.185		8.40		
82)	I	Chrysene-d12	-----ISTD-----							
83)	Benzidine	0.531 0.586 0.497		0.522	0.491	0.525		7.17		
84)	Pyrene	1.207 1.117 1.471 1.469 1.233	1.405	1.265	1.277	1.306		9.91		
85)	Terphenyl-d1	0.846 0.787 1.010 0.990 0.825	0.965	0.893	0.892	0.901		8.99		
86)	3,3'-Dimethylbenzidine	0.594 0.629 0.646		0.660	0.601	0.626		4.53		
87)	Butylbenzylphthalate	0.493 0.461 0.603 0.519 0.516		0.531	0.538	0.523		8.37		
88)	3,3'-Dichlorobiphenyl	0.437 0.416 0.464 0.445 0.421		0.447	0.472	0.443		4.61		
89)	Benzo[a]anthracene	1.087 1.009 1.138 1.120 1.109	1.142	1.131	1.147	1.110		4.08		
90)	Chrysene	1.055 1.087 1.085 1.068 1.067	1.047	1.132	1.102	1.080		2.55		
91)	bis(2-Ethylhexyl)phthalate	0.760 0.776 0.750 0.739 0.718		0.864	0.774	0.769		6.06		
92)	I	Perylene-d12	-----ISTD-----							
93)	Di-n-octylphthalate	1.378 1.329 1.333 1.279 1.206		1.285	1.369	1.311		4.55		
94)	Benzo[b]fluoranthene	1.384 1.371 1.344 1.194 1.265	1.111	1.275	1.227	1.271		7.38		
95)	Benzo[k]fluoranthene	1.114 1.076 1.150 1.242 1.061	0.907	1.218	1.317	1.136		11.19		
96)	Benzo[a]pyrene	1.147 1.132 1.156 1.109 1.079	1.025	1.117	1.164	1.116		4.12		
97)	Indeno[1,2,3]fluoranthene	1.205 1.314 1.399 1.559 1.472	1.195	1.304	1.633	1.385		11.54		

Initial Calibration Summary

Page 3 of 3

Job Number: JB37868

Sample: MSR1128-ICC1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30970.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

98) Dibenz[a,h]a 0.987 1.065 1.133 1.262 1.171 0.901 1.041 1.317 1.110 12.55
99) Benzo[g,h,i] 0.955 1.061 1.140 1.282 1.210 0.889 1.095 1.325 1.120 13.57

(#) = Out of Range ### Number of calibration levels exceeded format ###

R130530_8270+.m

Fri May 31 12:37:32 2013

9.7.1

9

Initial Calibration Verification

Job Number: JB37868

Sample: MSR1128-ICV1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30978.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\R13030\R30978.D Vial: 8
 Acq On : 30 May 2013 11:35 am Operator: kristinr
 Sample : ICV1128-50 Inst : MSR
 Misc : op33100,msrl1128,,,1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\R130530_8270+.m (RTE Integrator)
 Title : SW-864 Method 8270
 Last Update : Thu May 30 14:53:36 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	71	0.00	4.20
2	N-nitrosodimethylamine		-----NA-----				
3 T	Pyridine		-----NA-----				
4 T	Aniline		-----NA-----				
5 S	2-Fluorophenol	1.309	1.281	2.1	71	0.00	3.26
6 T	bis(2-Chloroethyl)ether		-----NA-----				
7 S	Phenol-d5	1.683	1.557	7.5	65	0.00	3.94
8 C	Phenol	1.755	1.681	4.2	68	0.00	3.95
9 M	2-Chlorophenol	1.450	1.408	2.9	68	0.00	4.07
10 T	1,3-Dichlorobenzene		-----NA-----				
11 C	1,4-Dichlorobenzene		-----NA-----				
12 T	1,2-Dichlorobenzene		-----NA-----				
13 T	Benzyl alcohol		-----NA-----				
14 T	bis(2-chloroisopropyl)eth		-----NA-----				
15 T	o-cresol	1.252	1.212	3.2	65	0.00	4.42
16 T	Acetophenone		-----NA-----				
17 T	Hexachloroethane		-----NA-----				
18 P	N-Nitroso-di-n-propylamin		-----NA-----				
19 T	m+p-cresols	1.333	1.298	2.6	67	0.00	4.54
20	4-methylphenol	1.333	1.298	2.6	67	0.00	4.54
21 I	1,4-Dichlorobenzene-d4A		-----NA-----				
22	Benzaldehyde		-----NA-----				
23 I	Naphthalene-d8	1.000	1.000	0.0	68	0.00	5.25
24 S	Nitrobenzene-d5		-----NA-----				
25 T	Nitrobenzene		-----NA-----				
26 T	Isophorone		-----NA-----				
27 C	2-Nitrophenol	0.197	0.194	1.5	66	0.00	4.95
28 T	2,4-Dimethylphenol	0.376	0.369	1.9	67	0.00	4.97
29 T	bis(2-Chloroethoxy)methan		-----NA-----				
30 T	Benzoic acid	0.265	0.288	-8.7	70	-0.02	5.06
31 C	2,4-Dichlorophenol	0.313	0.301	3.8	64	0.00	5.14
32 M	1,2,4-Trichlorobenzene		-----NA-----				
33 T	Naphthalene		-----NA-----				
34 T	2,6-Dichlorophenol	0.311	0.307	1.3	67	0.00	5.34
35 T	4-Chloroaniline		-----NA-----				
36 C	Hexachlorobutadiene		-----NA-----				
37 C	4-Chloro-3-methylphenol	0.309	0.302	2.3	65	0.00	5.75
38 T	2-Methylnaphthalene		-----NA-----				
39 T	1-Methylnaphthalene		-----NA-----				
40 T	1,2,4,5-Tetrachlorobenzen		-----NA-----				

9.7.2

9

Initial Calibration Verification

Job Number: JB37868

Sample: MSR1128-ICV1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30978.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

41	I	Naphthalene-d8a		-----	-NA-----				
42		Caprolactam		-----	-NA-----				
43	I	Acenaphthene-d10	1.000	1.000	0.0	65	0.00	6.79	
44	T	Pentachloronitrobenzene		-----	-NA-----				
45	P	Hexachlorocyclopentadiene		-----	-NA-----				
46	C	2,4,6-Trichlorophenol	0.405	0.409	-1.0	63	0.00	6.13	
47	T	2,4,5-Trichlorophenol	0.424	0.446	-5.2	65	0.00	6.17	
48	S	2-Fluorobiphenyl		-----	-NA-----				
49	T	2-Chloronaphthalene		-----	-NA-----				
50	M	Acenaphthylene		-----	-NA-----				
51	T	Dimethylphthalate		-----	-NA-----				
52	T	2,4-Dinitrotoluene		-----	-NA-----				
53	C	Acenaphthene		-----	-NA-----				
54	P	2,4-Dinitrophenol	0.199	0.167	16.1	53	0.00	6.85	
55	T	Dibenzofuran		-----	-NA-----				
56	M	2,6-Dinitrotoluene		-----	-NA-----				
57	P	4-Nitrophenol	0.266	0.267	-0.4	64	0.00	6.91	
58	T	2,3,4,6-Tetrachlorophenol		-----	-NA-----				
59	T	Fluorene		-----	-NA-----				
60	T	4-Chlorophenyl-phenylethane		-----	-NA-----				
61	T	Diethylphthalate		-----	-NA-----				
62	T	2-nitroaniline		-----	-NA-----				
63	T	3-nitroaniline		-----	-NA-----				
64	T	4-nitroaniline		-----	-NA-----				
65		Acenaphthene-d10a		-----	-NA-----				
66		1,1'-Biphenyl		-----	-NA-----				
67	I	Phenanthrene-d10	1.000	1.000	0.0	66	0.00	8.18	
68	T	4,6-Dinitro-2-methylpheno		-----	-NA-----				
69	C	n-Nitrosodiphenylamine		-----	-NA-----				
70	T	1,2-Diphenylhydrazine		-----	-NA-----				
71	S	2,4,6-Tribromophenol	0.129	0.116	10.1	57	0.00	7.52	
72	T	4-Bromophenyl-phenylether		-----	-NA-----				
73	T	Hexachlorobenzene		-----	-NA-----				
74	C	Pentachlorophenol	0.168	0.169	-0.6	64	0.00	8.06	
75	T	Phenanthrene		-----	-NA-----				
76	T	Anthracene		-----	-NA-----				
77	T	Carbazole		-----	-NA-----				
78	T	Di-n-butylphthalate		-----	-NA-----				
79	C	Fluoranthene		-----	-NA-----				
80	I	Phenanthrene-d10a		-----	-NA-----				
81		Atrazine		-----	-NA-----				
82	I	Chrysene-d12	1.000	1.000	0.0	73	0.00	11.14	
83	T	Benzidine		-----	-NA-----				
84	M	Pyrene		-----	-NA-----				
85	S	Terphenyl-d14		-----	-NA-----				
86		3,3-Dimethylbenzidine		-----	-NA-----				
87	T	Butylbenzylphthalate		-----	-NA-----				
88	T	3,3'-Dichlorobenzidine		-----	-NA-----				
89	T	Benzo[a]anthracene		-----	-NA-----				
90	T	Chrysene		-----	-NA-----				
91	T	bis(2-Ethylhexyl)phthalate		-----	-NA-----				
92	I	Perylene-d12	1.000	1.000	0.0	66	0.00	12.74	
93	C	Di-n-octylphthalate		-----	-NA-----				

9.7.2
9

Initial Calibration Verification

Job Number: JB37868

Sample: MSR1128-ICV1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30978.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

94 T	Benzo[b]fluoranthene	-----NA-----
95 T	Benzo[k]fluoranthene	-----NA-----
96 C	Benzo[a]pyrene	-----NA-----
97 T	Indeno[1,2,3-cd]pyrene	-----NA-----
98 T	Dibenz[a,h]anthracene	-----NA-----
99 T	Benzo[g,h,i]perylene	-----NA-----

(#) = Out of Range
R30970.D R130530_8270+.mSPCC's out = 2 CCC's out = 7
Thu May 30 14:55:23 20139.7.2
9

Initial Calibration Verification

Job Number: JB37868

Sample: MSR1128-ICV1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30979.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\R13030\R30979.D Vial: 9
 Acq On : 30 May 2013 12:01 pm Operator: kristinr
 Sample : ICV1128-20 Inst : MSR
 Misc : op33100,msrl1128,,,1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...R130530_8270+.m (RTE Integrator)
 Title : SW-864 Method 8270
 Last Update : Thu May 30 14:53:36 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	100	0.00
2 S	N-nitrosodimethylamine	0.806	0.898	-11.4	106	0.00
3 T	Pyridine	1.455	1.511	-3.8	98	0.01
4 T	Aniline			-----NA-----		
5 S	2-Fluorophenol			-----NA-----		
6 T	bis(2-Chloroethyl)ether	1.011	1.026	-1.5	97	0.00
7 S	Phenol-d5			-----NA-----		
8 C	Phenol			-----NA-----		
9 M	2-Chlorophenol			-----NA-----		
10 T	1,3-Dichlorobenzene	1.559	1.624	-4.2	102	0.00
11 C	1,4-Dichlorobenzene	1.634	1.687	-3.2	103	0.00
12 T	1,2-Dichlorobenzene	1.486	1.556	-4.7	105	0.00
13 T	Benzyl alcohol	0.778	0.749	3.7	94	0.00
14 T	bis(2-chloroisopropyl)eth	1.592	1.942	-22.0#	123	0.00
15 T	o-cresol			-----NA-----		
16 T	Acetophenone	1.964	1.890	3.8	97	0.00
17 T	Hexachloroethane	0.602	0.647	-7.5	110	0.00
18 P	N-Nitroso-di-n-propylamin	0.963	1.003	-4.2	105	-0.01
19 T	m+p-cresols			-----NA-----		
20	4-methylphenol			-----NA-----		
21 I	1,4-Dichlorobenzene-d4A			-----NA-----		
22	Benzaldehyde			-----NA-----		
23 I	Naphthalene-d8	1.000	1.000	0.0	103	0.00
24 S	Nitrobenzene-d5	0.398	0.385	3.3	97	0.00
25 T	Nitrobenzene	0.397	0.392	1.3	100	0.00
26 T	Isophorone	0.694	0.673	3.0	99	0.00
27 C	2-Nitrophenol			-----NA-----		
28 T	2,4-Dimethylphenol			-----NA-----		
29 T	bis(2-Chloroethoxy)methan	0.410	0.414	-1.0	105	0.00
30 T	Benzoic acid			-----NA-----		
31 C	2,4-Dichlorophenol			-----NA-----		
32 M	1,2,4-Trichlorobenzene	0.341	0.357	-4.7	107	0.00
33 T	Naphthalene	1.075	1.106	-2.9	106	0.00
34 T	2,6-Dichlorophenol			-----NA-----		
35 T	4-Chloroaniline			-----NA-----		
36 C	Hexachlorobutadiene	0.202	0.218	-7.9	109	0.00
37 C	4-Chloro-3-methylphenol			-----NA-----		
38 T	2-Methylnaphthalene	0.730	0.710	2.7	103	0.00
39 T	1-Methylnaphthalene	0.704	0.695	1.3	103	0.00
40 T	1,2,4,5-Tetrachlorobenzen	0.378	0.376	0.5	102	0.00

9.7.3
9

Initial Calibration Verification

Job Number: JB37868

Sample: MSR1128-ICV1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30979.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

41	I	Naphthalene-d8a		-----NA-----			
42		Caprolactam		-----NA-----			
43	I	Acenaphthene-d10	1.000	1.000	0.0	102	0.00
44	T	Pentachloronitrobenzene	0.181	0.175	3.3	99	0.00
45	P	Hexachlorocyclopentadiene	0.364	0.196	46.2#	56	0.00
46	C	2,4,6-Trichlorophenol		-----NA-----			
47	T	2,4,5-Trichlorophenol		-----NA-----			
48	S	2-Fluorobiphenyl	1.408	1.459	-3.6	104	0.00
49	T	2-Chloronaphthalene	1.157	1.251	-8.1	110	0.00
50	M	Acenaphthylene	1.880	1.532	18.5	82	0.00
51	T	Dimethylphthalate	1.365	1.384	-1.4	104	0.00
52	T	2,4-Dinitrotoluene	0.404	0.397	1.7	101	0.00
53	C	Acenaphthene	1.252	1.312	-4.8	107	0.00
54	P	2,4-Dinitrophenol		-----NA-----			
55	T	Dibenzofuran	1.721	1.744	-1.3	103	0.00
56	M	2,6-Dinitrotoluene	0.309	0.308	0.3	103	0.00
57	P	4-Nitrophenol		-----NA-----			
58	T	2,3,4,6-Tetrachlorophenol		-----NA-----			
59	T	Fluorene	1.382	1.435	-3.8	105	0.00
60	T	4-Chlorophenyl-phenylethane	0.690	0.709	-2.8	104	0.00
61	T	Diethylphthalate	1.330	1.376	-3.5	105	0.00
62	T	2-nitroaniline	0.392	0.419	-6.9	105	0.00
63	T	3-nitroaniline	0.346	0.293	15.3	86	0.00
64	T	4-nitroaniline	0.348	0.317	8.9	93	-0.01
65		Acenaphthene-d10a		-----NA-----			
66		1,1'-Biphenyl		-----NA-----			
67	I	Phenanthrene-d10	1.000	1.000	0.0	101	0.00
68	T	4,6-Dinitro-2-methylpheno		-----NA-----			
69	C	n-Nitrosodiphenylamine	0.584	0.547	6.3	94	0.00
70	T	1,2-Diphenylhydrazine	0.863	0.788	8.7	102	0.00
71	S	2,4,6-Tribromophenol		-----NA-----			
72	T	4-Bromophenyl-phenylether	0.245	0.238	2.9	98	0.00
73	T	Hexachlorobenzene	0.261	0.267	-2.3	106	0.00
74	C	Pentachlorophenol		-----NA-----			
75	T	Phenanthrene	1.180	1.220	-3.4	104	0.00
76	T	Anthracene	1.228	1.220	0.7	99	0.00
77	T	Carbazole	1.100	1.114	-1.3	102	0.00
78	T	Di-n-butylphthalate	1.311	1.276	2.7	96	0.00
79	C	Fluoranthene	1.206	1.303	-8.0	99	0.00
80	I	Phenanthrene-d10a		-----NA-----			
81		Atrazine		-----NA-----			
82	I	Chrysene-d12	1.000	1.000	0.0	96	0.00
83	T	Benzidine		-----NA-----			
84	M	Pyrene	1.306	1.386	-6.1	91	0.00
85	S	Terphenyl-d14	0.901	0.846	6.1	82	0.00
86		3,3-Dimethylbenzidine		-----NA-----			
87	T	Butylbenzylphthalate	0.523	0.529	-1.1	98	0.00
88	T	3,3'-Dichlorobenzidine		-----NA-----			
89	T	Benzo[a]anthracene	1.110	1.189	-7.1	102	0.00
90	T	Chrysene	1.080	1.107	-2.5	99	0.00
91	T	bis(2-Ethylhexyl)phthalat	0.769	0.752	2.2	98	0.00
92	I	Perylene-d12	1.000	1.000	0.0	109	0.00
93	C	Di-n-octylphthalate	1.311	1.188	9.4	101	0.00

Initial Calibration Verification

Page 3 of 3

Job Number: JB37868

Sample: MSR1128-ICV1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30979.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

94 T	Benzo[b]fluoranthene	1.271	1.048	17.5	96	-0.01	12.34
95 T	Benzo[k]fluoranthene	1.136	1.143	-0.6	100	0.00	12.37
96 C	Benzo[a]pyrene	1.116	1.051	5.8	103	0.00	12.68
97 T	Indeno[1,2,3-cd]pyrene	1.385	1.431	-3.3	100	-0.01	13.87
98 T	Dibenz[a,h]anthracene	1.110	1.176	-5.9	102	-0.01	13.88
99 T	Benzo[g,h,i]perylene	1.120	1.200	-7.1	102	-0.01	14.18

(#) = Out of Range
R30974.D R130530_8270+.m

SPCC's out = 2 CCC's out = 6
Fri May 31 12:35:15 2013

9.7.3
9

Initial Calibration Verification

Job Number: JB37868

Sample: MSR1128-ICV1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30980.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\R13030\R30980.D Vial: 10
 Acq On : 30 May 2013 12:24 pm Operator: kristinr
 Sample : ICV1128-20 Inst : MSR
 Misc : op33100,msrl1128,,,1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\R130530_8270+.m (RTE Integrator)
 Title : SW-864 Method 8270
 Last Update : Thu May 30 14:53:36 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	93	0.00	4.20
2	N-nitrosodimethylamine		-----NA-----				
3 T	Pyridine		-----NA-----				
4 T	Aniline	0.810	0.756	6.7	85	0.00	3.98
5 S	2-Fluorophenol		-----NA-----				
6 T	bis(2-Chloroethyl)ether		-----NA-----				
7 S	Phenol-d5		-----NA-----				
8 C	Phenol		-----NA-----				
9 M	2-Chlorophenol		-----NA-----				
10 T	1,3-Dichlorobenzene		-----NA-----				
11 C	1,4-Dichlorobenzene		-----NA-----				
12 T	1,2-Dichlorobenzene		-----NA-----				
13 T	Benzyl alcohol		-----NA-----				
14 T	bis(2-chloroisopropyl)eth		-----NA-----				
15 T	o-cresol		-----NA-----				
16 T	Acetophenone		-----NA-----				
17 T	Hexachloroethane		-----NA-----				
18 P	N-Nitroso-di-n-propylamin		-----NA-----				
19 T	m+p-cresols		-----NA-----				
20	4-methylphenol		-----NA-----				
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	61	-0.07	4.20
22	Benzaldehyde		-----NA-----				
23 I	Naphthalene-d8	1.000	1.000	0.0	94	0.00	5.25
24 S	Nitrobenzene-d5		-----NA-----				
25 T	Nitrobenzene		-----NA-----				
26 T	Isophorone		-----NA-----				
27 C	2-Nitrophenol		-----NA-----				
28 T	2,4-Dimethylphenol		-----NA-----				
29 T	bis(2-Chloroethoxy)methan		-----NA-----				
30 T	Benzoic acid		-----NA-----				
31 C	2,4-Dichlorophenol		-----NA-----				
32 M	1,2,4-Trichlorobenzene		-----NA-----				
33 T	Naphthalene		-----NA-----				
34 T	2,6-Dichlorophenol		-----NA-----				
35 T	4-Chloroaniline	0.455	0.417	8.4	86	0.00	5.34
36 C	Hexachlorobutadiene		-----NA-----				
37 C	4-Chloro-3-methylphenol		-----NA-----				
38 T	2-Methylnaphthalene		-----NA-----				
39 T	1-Methylnaphthalene		-----NA-----				
40 T	1,2,4,5-Tetrachlorobenzen		-----NA-----				

9.7.4

9

Initial Calibration Verification

Job Number: JB37868

Sample: MSR1128-ICV1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30980.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

41	I	Naphthalene-d8a	1.000	1.000	0.0	60	-0.07	5.25
42		Caprolactam		-----NA-----				
43	I	Acenaphthene-d10	1.000	1.000	0.0	89	0.00	6.79
44	T	Pentachloronitrobenzene		-----NA-----				
45	P	Hexachlorocyclopentadiene		-----NA-----				
46	C	2,4,6-Trichlorophenol		-----NA-----				
47	T	2,4,5-Trichlorophenol		-----NA-----				
48	S	2-Fluorobiphenyl		-----NA-----				
49	T	2-Chloronaphthalene		-----NA-----				
50	M	Acenaphthylene		-----NA-----				
51	T	Dimethylphthalate		-----NA-----				
52	T	2,4-Dinitrotoluene		-----NA-----				
53	C	Acenaphthene		-----NA-----				
54	P	2,4-Dinitrophenol		-----NA-----				
55	T	Dibenzofuran		-----NA-----				
56	M	2,6-Dinitrotoluene		-----NA-----				
57	P	4-Nitrophenol		-----NA-----				
58	T	2,3,4,6-Tetrachlorophenol		-----NA-----				
59	T	Fluorene		-----NA-----				
60	T	4-Chlorophenyl-phenylethane		-----NA-----				
61	T	Diethylphthalate		-----NA-----				
62	T	2-nitroaniline		-----NA-----				
63	T	3-nitroaniline		-----NA-----				
64	T	4-nitroaniline		-----NA-----				
65		Acenaphthene-d10a	1.000	1.000	0.0	56	-0.07	6.79
66		1,1'-Biphenyl		-----NA-----				
67	I	Phenanthrene-d10	1.000	1.000	0.0	94	0.00	8.18
68	T	4,6-Dinitro-2-methylpheno		-----NA-----				
69	C	n-Nitrosodiphenylamine		-----NA-----				
70	T	1,2-Diphenylhydrazine		-----NA-----				
71	S	2,4,6-Tribromophenol		-----NA-----				
72	T	4-Bromophenyl-phenylether		-----NA-----				
73	T	Hexachlorobenzene		-----NA-----				
74	C	Pentachlorophenol		-----NA-----				
75	T	Phenanthrene		-----NA-----				
76	T	Anthracene		-----NA-----				
77	T	Carbazole		-----NA-----				
78	T	Di-n-butylphthalate		-----NA-----				
79	C	Fluoranthene		-----NA-----				
80	I	Phenanthrene-d10a	1.000	1.000	0.0	58	-0.08	8.18
81		Atrazine		-----NA-----				
82	I	Chrysene-d12	1.000	1.000	0.0	90	0.00	11.14
83	T	Benzidine	0.525	0.712	-35.6#	110	0.00	9.64
84	M	Pyrene		-----NA-----				
85	S	Terphenyl-d14		-----NA-----				
86		3,3-Dimethylbenzidine		-----NA-----				
87	T	Butylbenzylphthalate		-----NA-----				
88	T	3,3'-Dichlorobenzidine	0.443	0.420	5.2	85	0.00	11.12
89	T	Benzo[a]anthracene		-----NA-----				
90	T	Chrysene		-----NA-----				
91	T	bis(2-Ethylhexyl)phthalate		-----NA-----				
92	I	Perylene-d12	1.000	1.000	0.0	111	0.00	12.74
93	C	Di-n-octylphthalate		-----NA-----				

9.7.4
9

Initial Calibration Verification

Job Number: JB37868

Sample: MSR1128-ICV1128

Account: ALNJ Accutest New Jersey

Lab FileID: R30980.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

94 T	Benzo[b]fluoranthene	-----NA-----
95 T	Benzo[k]fluoranthene	-----NA-----
96 C	Benzo[a]pyrene	-----NA-----
97 T	Indeno[1,2,3-cd]pyrene	-----NA-----
98 T	Dibenz[a,h]anthracene	-----NA-----
99 T	Benzo[g,h,i]perylene	-----NA-----

(#) = Out of Range
 R30974.D R130530_8270+.m

SPCC's out = 4 CCC's out = 13
 Fri May 31 12:37:23 2013

9.7.4

9

Continuing Calibration Summary

Job Number: JB37868

Sample: MSR1136-CC1128

Account: ALNJ Accutest New Jersey

Lab FileID: R31219.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\R130605\R31219.D Vial: 100
 Acq On : 5 Jun 2013 2:32 pm Operator: kristinr
 Sample : CC1128-80 Inst : MSR
 Misc : OP33285,MSr1136,,,1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\R130530_8270+.m (RTE Integrator)
 Title : SW-864 Method 8270
 Last Update : Thu May 30 14:53:36 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	69	-0.10	4.11	
2	N-nitrosodimethylamine	0.806	0.768	4.7	66	-0.11	2.27	
3 T	Pyridine	1.455	1.393	4.3	66	-0.11	2.27	
4 T	Aniline	0.810	0.777	4.1	66	-0.09	3.88	
5 S	2-Fluorophenol	1.309	1.267	3.2	66	-0.09	3.17	
6 T	bis(2-Chloroethyl)ether	1.011	0.931	7.9	64	-0.10	3.92	
7 S	Phenol-d5	1.683	1.663	1.2	68	-0.08	3.86	
8 C	Phenol	1.755	1.857	-5.8	73	-0.09	3.87	
9 M	2-Chlorophenol	1.450	1.452	-0.1	68	-0.09	3.97	
10 T	1,3-Dichlorobenzene	1.559	1.587	-1.8	70	-0.10	4.08	
11 C	1,4-Dichlorobenzene	1.634	1.663	-1.8	69	-0.10	4.12	
12 T	1,2-Dichlorobenzene	1.486	1.521	-2.4	70	-0.10	4.27	
13 T	Benzyl alcohol	0.778	0.760	2.3	64	-0.09	4.23	
14 T	bis(2-chloroisopropyl)eth	1.592	1.432	10.1	62	-0.09	4.35	
15 T	o-cresol	1.252	1.279	-2.2	70	-0.09	4.34	
16 T	Acetophenone	1.964	1.980	-0.8	71	-0.09	4.45	
17 T	Hexachloroethane	0.602	0.607	-0.8	68	-0.10	4.51	
18 P	N-Nitroso-di-n-propylamin	0.963	0.990	-2.8	70	-0.09	4.47	
19 T	m+p-cresols	1.333	1.386	-4.0	72	-0.09	4.45	
20	4-methylphenol	1.333	1.386	-4.0	72	-0.09	4.45	
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	40#	-0.16	4.11	
22	Benzaldehyde			-----NA-----				
23 I	Naphthalene-d8	1.000	1.000	0.0	74	-0.10	5.16	
24 S	Nitrobenzene-d5	0.398	0.364	8.5	68	-0.10	4.58	
25 T	Nitrobenzene	0.397	0.370	6.8	69	-0.09	4.60	
26 T	Isophorone	0.694	0.653	5.9	70	-0.09	4.78	
27 C	2-Nitrophenol	0.197	0.197	0.0	73	-0.09	4.86	
28 T	2,4-Dimethylphenol	0.376	0.367	2.4	72	-0.09	4.88	
29 T	bis(2-Chloroethoxy)methan	0.410	0.391	4.6	71	-0.10	4.96	
30 T	Benzoic acid	0.265	0.289	-9.1	75	-0.08	5.01	
31 C	2,4-Dichlorophenol	0.313	0.319	-1.9	75	-0.09	5.05	
32 M	1,2,4-Trichlorobenzene	0.341	0.339	0.6	75	-0.10	5.12	
33 T	Naphthalene	1.075	1.034	3.8	72	-0.10	5.18	
34 T	2,6-Dichlorophenol	0.311	0.314	-1.0	75	-0.09	5.25	
35 T	4-Chloroaniline	0.455	0.464	-2.0	75	-0.09	5.24	
36 C	Hexachlorobutadiene	0.202	0.202	0.0	74	-0.10	5.32	
37 C	4-Chloro-3-methylphenol	0.309	0.310	-0.3	76	-0.09	5.65	
38 T	2-Methylnaphthalene	0.730	0.731	-0.1	78	-0.09	5.77	
39 T	1-Methylnaphthalene	0.704	0.687	2.4	76	-0.10	5.86	
40 T	1,2,4,5-Tetrachlorobenzen	0.378	0.371	1.9	76	-0.09	5.95	

Continuing Calibration Summary

Page 2 of 3

Job Number: JB37868

Sample: MSR1136-CC1128

Account: ALNJ Accutest New Jersey

Lab FileID: R31219.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

41	I	Naphthalene-d8a	1.000	1.000	0.0	43#	-0.17	5.16
42		Caprolactam			-----NA-----			
43	I	Acenaphthene-d10	1.000	1.000	0.0	73	-0.10	6.69
44	T	Pentachloronitrobenzene	0.181	0.188	-3.9	76	-0.11	8.03
45	P	Hexachlorocyclopentadiene	0.364	0.385	-5.8	75	-0.10	5.96
46	C	2,4,6-Trichlorophenol	0.405	0.418	-3.2	79	-0.09	6.04
47	T	2,4,5-Trichlorophenol	0.424	0.448	-5.7	81	-0.09	6.07
48	S	2-Fluorobiphenyl	1.408	1.397	0.8	78	-0.10	6.10
49	T	2-Chloronaphthalene	1.157	1.155	0.2	77	-0.10	6.18
50	M	Acenaphthylene	1.880	1.933	-2.8	78	-0.10	6.55
51	T	Dimethylphthalate	1.365	1.420	-4.0	80	-0.09	6.48
52	T	2,4-Dinitrotoluene	0.404	0.426	-5.4	74	-0.10	6.90
53	C	Acenaphthene	1.252	1.250	0.2	73	-0.10	6.72
54	P	2,4-Dinitrophenol	0.199	0.223	-12.1	79	-0.09	6.77
55	T	Dibenzofuran	1.721	1.782	-3.5	75	-0.11	6.85
56	M	2,6-Dinitrotoluene	0.309	0.338	-9.4	81	-0.10	6.55
57	P	4-Nitrophenol	0.266	0.272	-2.3	73	-0.09	6.83
58	T	2,3,4,6-Tetrachlorophenol	0.357	0.384	-7.6	77	-0.11	7.01
59	T	Fluorene	1.382	1.437	-4.0	75	-0.11	7.17
60	T	4-Chlorophenyl-phenylethane	0.690	0.721	-4.5	76	-0.11	7.16
61	T	Diethylphthalate	1.330	1.379	-3.7	75	-0.10	7.11
62	T	2-nitroaniline	0.392	0.415	-5.9	78	-0.09	6.31
63	T	3-nitroaniline	0.346	0.344	0.6	74	-0.09	6.68
64	T	4-nitroaniline	0.348	0.360	-3.4	73	-0.11	7.24
65		Acenaphthene-d10a	1.000	1.000	0.0	43#	-0.17	6.69
66		1,1'-Biphenyl			-----NA-----			
67	I	Phenanthrene-d10	1.000	1.000	0.0	75	-0.11	8.07
68	T	4,6-Dinitro-2-methylpheno	0.151	0.164	-8.6	78	-0.10	7.27
69	C	n-Nitrosodiphenylamine	0.584	0.574	1.7	75	-0.11	7.28
70	T	1,2-Diphenylhydrazine	0.863	0.816	5.4	70	-0.11	7.31
71	S	2,4,6-Tribromophenol	0.129	0.128	0.8	78	-0.11	7.42
72	T	4-Bromophenyl-phenylether	0.245	0.246	-0.4	77	-0.11	7.62
73	T	Hexachlorobenzene	0.261	0.259	0.8	76	-0.11	7.77
74	C	Pentachlorophenol	0.168	0.174	-3.6	76	-0.11	7.95
75	T	Phenanthrene	1.180	1.241	-5.2	80	-0.07	8.14
76	T	Anthracene	1.228	1.241	-1.1	76	-0.11	8.14
77	T	Carbazole	1.100	1.108	-0.7	74	-0.12	8.31
78	T	Di-n-butylphthalate	1.311	1.387	-5.8	77	-0.11	8.72
79	C	Fluoranthene	1.206	1.324	-9.8	78	-0.12	9.37
80	I	Phenanthrene-d10a	1.000	1.000	0.0	43#	-0.19	8.07
81		Atrazine			-----NA-----			
82	I	Chrysene-d12	1.000	1.000	0.0	93	-0.12	11.02
83	T	Benzidine	0.525	0.479	8.8	84	-0.12	9.52
84	M	Pyrene	1.306	1.228	6.0	77	-0.12	9.62
85	S	Terphenyl-d14	0.901	0.867	3.8	79	-0.12	9.80
86		3,3-Dimethylbenzidine	0.626	0.576	8.0	90	-0.12	10.38
87	T	Butylbenzylphthalate	0.523	0.518	1.0	80	-0.12	10.41
88	T	3,3'-Dichlorobenzidine	0.443	0.471	-6.3	94	-0.12	11.01
89	T	Benzo[a]anthracene	1.110	1.129	-1.7	92	-0.13	11.00
90	T	Chrysene	1.080	1.090	-0.9	93	-0.13	11.05
91	T	bis(2-Ethylhexyl)phthalat	0.769	0.762	0.9	94	-0.12	11.10
92	I	Perylene-d12	1.000	1.000	0.0	95	-0.13	12.61
93	C	Di-n-octylphthalate	1.311	1.323	-0.9	95	-0.12	11.79

9
6.75

Continuing Calibration Summary

Job Number: JB37868

Sample:

MSR1136-CC1128

Account: ALNJ Accutest New Jersey

Lab FileID:

R31219.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

94 T	Benzo[b]fluoranthene	1.271	1.344	-5.7	96	-0.13	12.22
95 T	Benzo[k]fluoranthene	1.136	1.142	-0.5	95	-0.13	12.24
96 C	Benzo[a]pyrene	1.116	1.140	-2.2	94	-0.13	12.55
97 T	Indeno[1,2,3-cd]pyrene	1.385	1.400	-1.1	96	-0.16	13.72
98 T	Dibenz[a,h]anthracene	1.110	1.151	-3.7	97	-0.16	13.72
99 T	Benzo[g,h,i]perylene	1.120	1.134	-1.2	95	-0.18	14.02

(#) = Out of Range
 R30975.D R130530_8270+.m

SPCC's out = 0 CCC's out = 0
 Wed Jun 05 18:09:55 2013



GC/MS Semi-volatiles

Raw Data

(Accutest Labs of New England, Inc.)

**Manual Integrations
APPROVED
(compounds with "m" flag)**
Doug Yargeau
06/15/13 06:51

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\R130605\
Data File : R31235.D
Acq On : 5 Jun 2013 8:44 pm
Operator : kristinr
Sample : jb37868-1
Misc : op33467,msrl1136,20.32,,,1,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Jun 14 10:26:13 2013
Quant Method : C:\msdchem\1\methods\R130530_8270+.m
Quant Title : SW-864 Method 8270
QLast Update : Wed Jun 12 13:16:47 2013
Response via : Initial Calibration

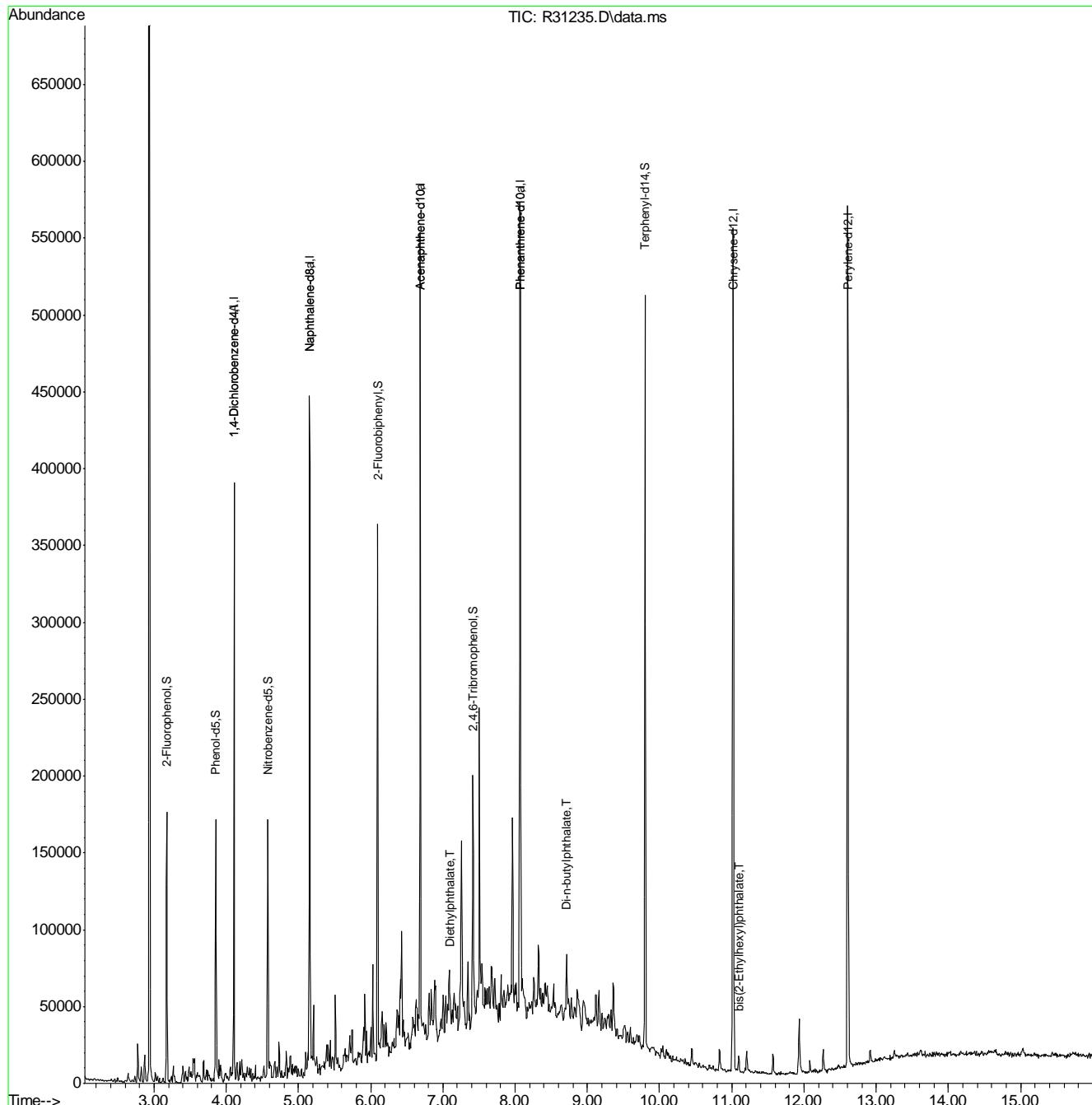
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.107	152	46154	40.00	ppm	-0.10
21) 1,4-Dichlorobenzene-d4A	4.107	152	46154	40.00	PPM	#-0.16
23) Naphthalene-d8	5.154	136	177998	40.00	ppm	-0.11
41) Naphthalene-d8a	5.154	136	177998	40.00	ppm	#-0.17
43) Acenaphthene-d10	6.684	164	104210	40.00	ppm	-0.11
65) Acenaphthene-d10a	6.684	164	104210	40.00	ppm	#-0.18
67) Phenanthrene-d10	8.066	188	183591m	40.00	ppm	-0.12
80) Phenanthrene-d10a	8.066	188	183201m	40.00	ppm	-0.20
82) Chrysene-d12	11.019	240	205172	40.00	ppm	-0.13
92) Perylene-d12	12.607	264	211597	40.00	ppm	-0.14
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.178	112	39959	26.46	ppm	-0.09
Spiked Amount 100.000	Range 30 - 130		Recovery =	26.46%#		
7) Phenol-d5	3.854	99	46342	23.87	ppm	-0.09
Spiked Amount 100.000	Range 30 - 130		Recovery =	23.87%#		
24) Nitrobenzene-d5	4.578	82	45555	25.70	ppm	-0.10
Spiked Amount 50.000	Range 30 - 130		Recovery =	51.40%		
48) 2-Fluorobiphenyl	6.095	172	100762	27.47	ppm	-0.10
Spiked Amount 50.000	Range 30 - 130		Recovery =	54.94%		
71) 2,4,6-Tribromophenol	7.413	330	17432	29.55	ppm	-0.11
Spiked Amount 100.000	Range 30 - 130		Recovery =	29.55%#		
85) Terphenyl-d14	9.801	244	153425	33.20	ppm	-0.12
Spiked Amount 50.000	Range 30 - 130		Recovery =	66.40%		
<hr/>						
Target Compounds						
61) Diethylphthalate	7.095	149	2690	0.78	ppm	97
78) Di-n-butylphthalate	8.713	149	3852	0.64	ppm	89
91) bis(2-Ethylhexyl)phtha...	11.095	149	3358	0.85	ppm	87

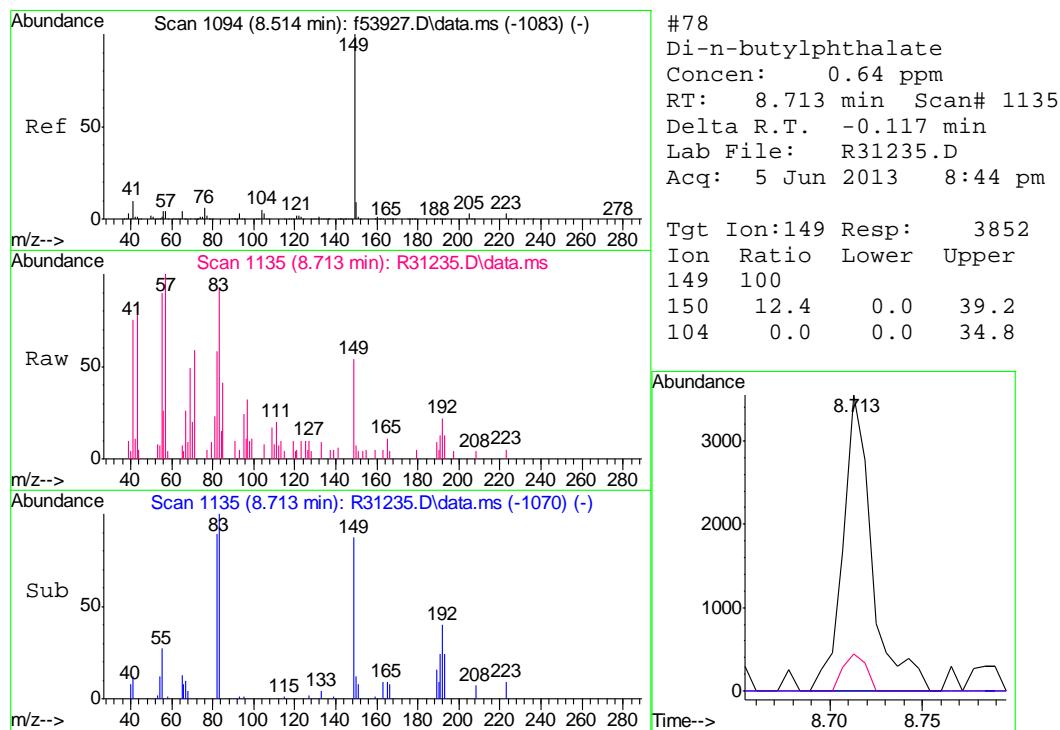
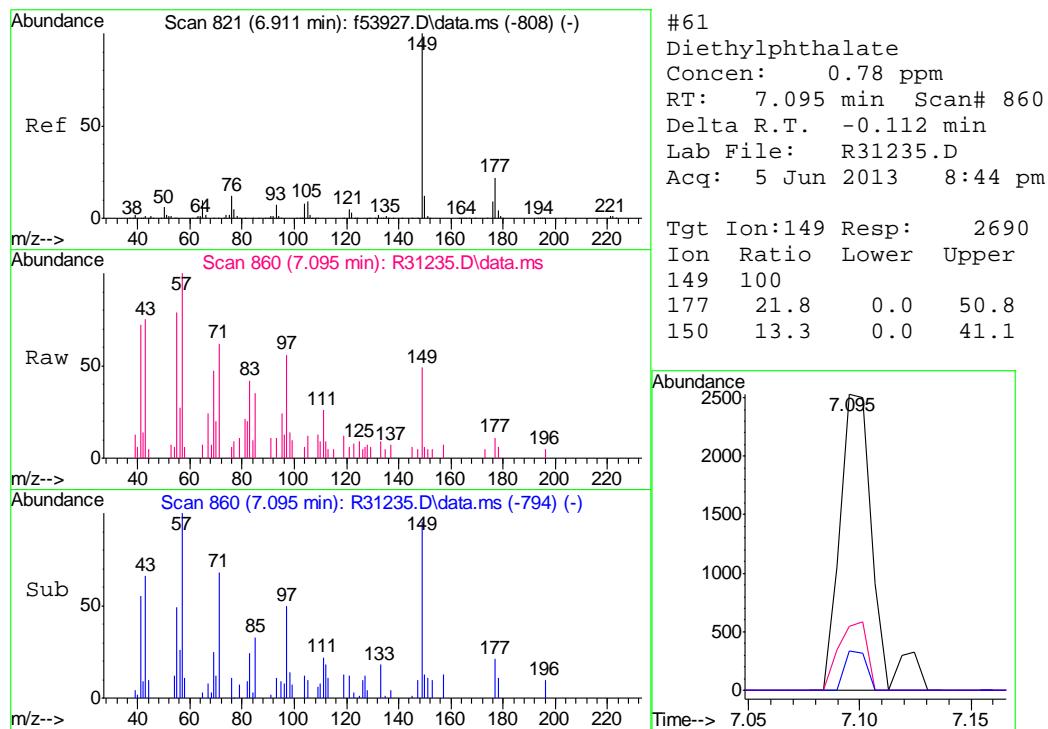
(#) = qualifier out of range (m) = manual integration (+) = signals summed

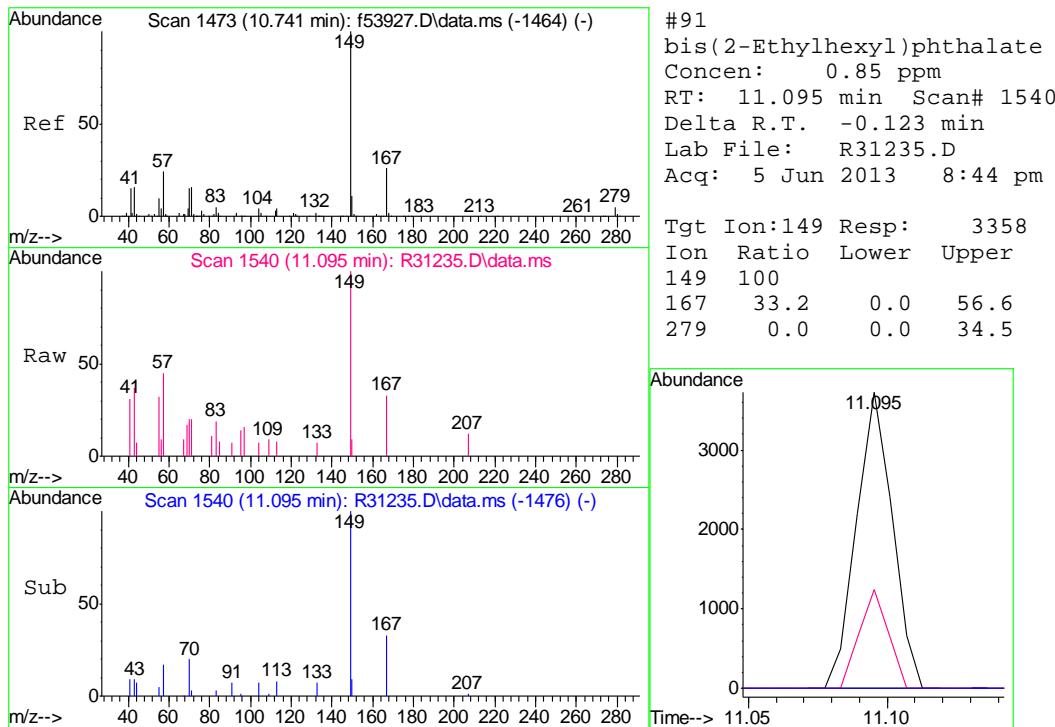
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\R130605\
 Data File : R31235.D
 Acq On : 5 Jun 2013 8:44 pm
 Operator : kristinr
 Sample : jb37868-1
 Misc : op33467,msrl1136,20.32,,,1,1
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: Jun 14 10:26:13 2013
 Quant Method : C:\msdchem\1\methods\R130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Wed Jun 12 13:16:47 2013
 Response via : Initial Calibration







Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\R130605\
 Data File : R31236.D
 Acq On : 5 Jun 2013 9:07 pm
 Operator : kristinr
 Sample : jb37868-2
 Misc : op33467,msrl1136,20.33,,,1,1
 ALS Vial : 17 Sample Multiplier: 1

Quant Time: Jun 14 10:27:14 2013
 Quant Method : C:\msdchem\1\methods\R130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Wed Jun 12 13:16:47 2013
 Response via : Initial Calibration

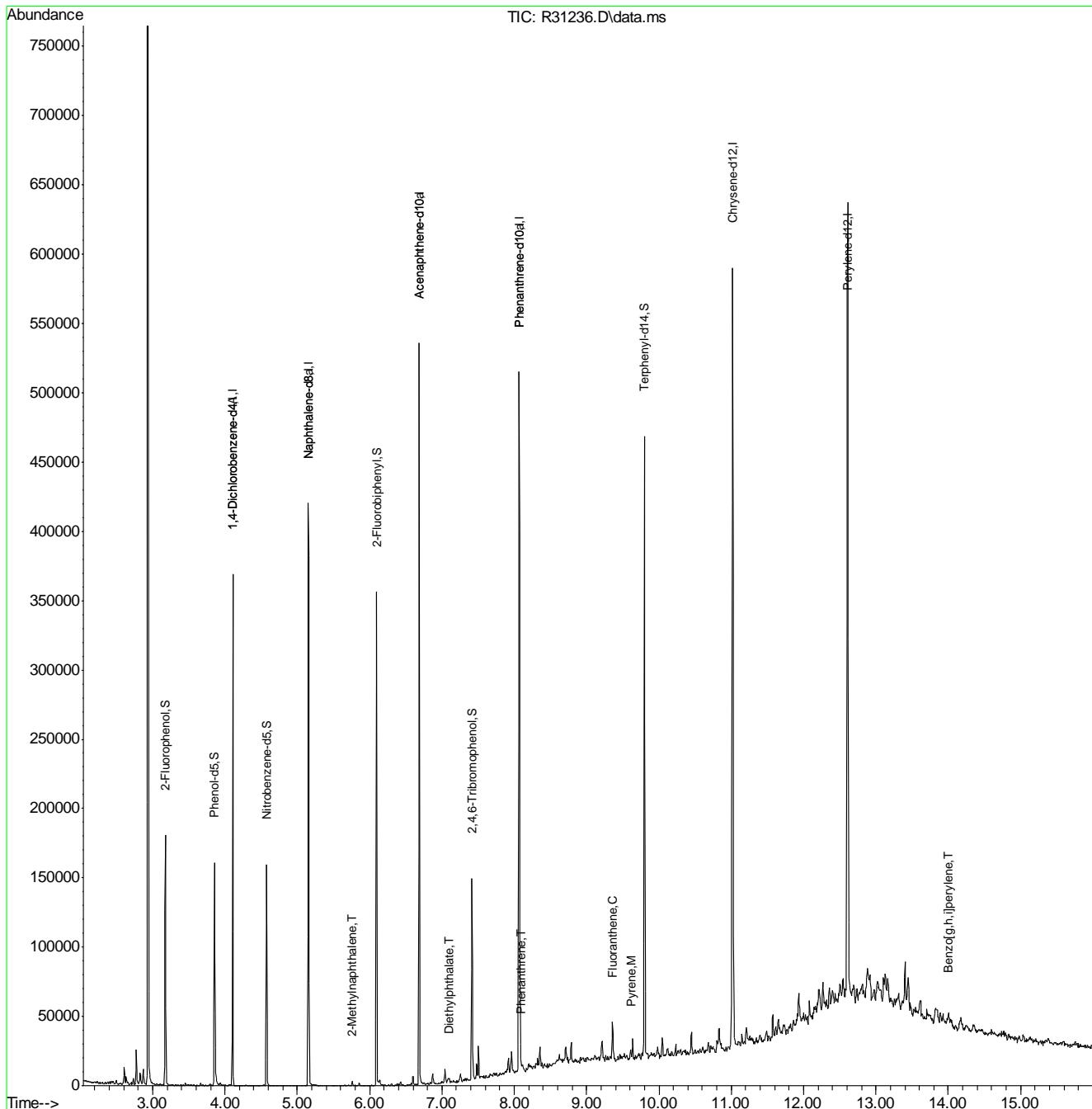
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.107	152	45072	40.00	ppm	-0.10
21) 1,4-Dichlorobenzene-d4A	4.107	152	45072	40.00	PPM	#-0.16
23) Naphthalene-d8	5.154	136	176593	40.00	ppm	-0.11
41) Naphthalene-d8a	5.154	136	176593	40.00	ppm	#-0.17
43) Acenaphthene-d10	6.684	164	103167	40.00	ppm	-0.11
65) Acenaphthene-d10a	6.684	164	103167	40.00	ppm	#-0.18
67) Phenanthrene-d10	8.066	188	179233m	40.00	ppm	-0.12
80) Phenanthrene-d10a	8.066	188	179711m	40.00	ppm	-0.20
82) Chrysene-d12	11.019	240	204912	40.00	ppm	-0.13
92) Perylene-d12	12.613	264	217406	40.00	ppm	-0.13
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.178	112	41412	28.08	ppm	-0.09
Spiked Amount 100.000	Range 30 - 130		Recovery = 28.08%#			
7) Phenol-d5	3.854	99	47757	25.19	ppm	-0.09
Spiked Amount 100.000	Range 30 - 130		Recovery = 25.19%#			
24) Nitrobenzene-d5	4.578	82	41673	23.70	ppm	-0.10
Spiked Amount 50.000	Range 30 - 130		Recovery = 47.40%			
48) 2-Fluorobiphenyl	6.095	172	103809	28.59	ppm	-0.10
Spiked Amount 50.000	Range 30 - 130		Recovery = 57.18%			
71) 2,4,6-Tribromophenol	7.413	330	16136	28.02	ppm	-0.11
Spiked Amount 100.000	Range 30 - 130		Recovery = 28.02%#			
85) Terphenyl-d14	9.801	244	139167	30.16	ppm	-0.12
Spiked Amount 50.000	Range 30 - 130		Recovery = 60.32%			
<hr/>						
Target Compounds				Qvalue		
38) 2-Methylnaphthalene	5.760	142	1015	0.31	ppm	85
61) Diethylphthalate	7.101	149	1472	0.43	ppm	82
75) Phenanthrene	8.089	178	1873	0.35	ppm	96
79) Fluoranthene	9.360	202	1613	0.30	ppm	69
84) Pyrene	9.613	202	2362	0.35	ppm	98
99) Benzo[g,h,i]perylene	14.001	276	3411	0.56	ppm	93

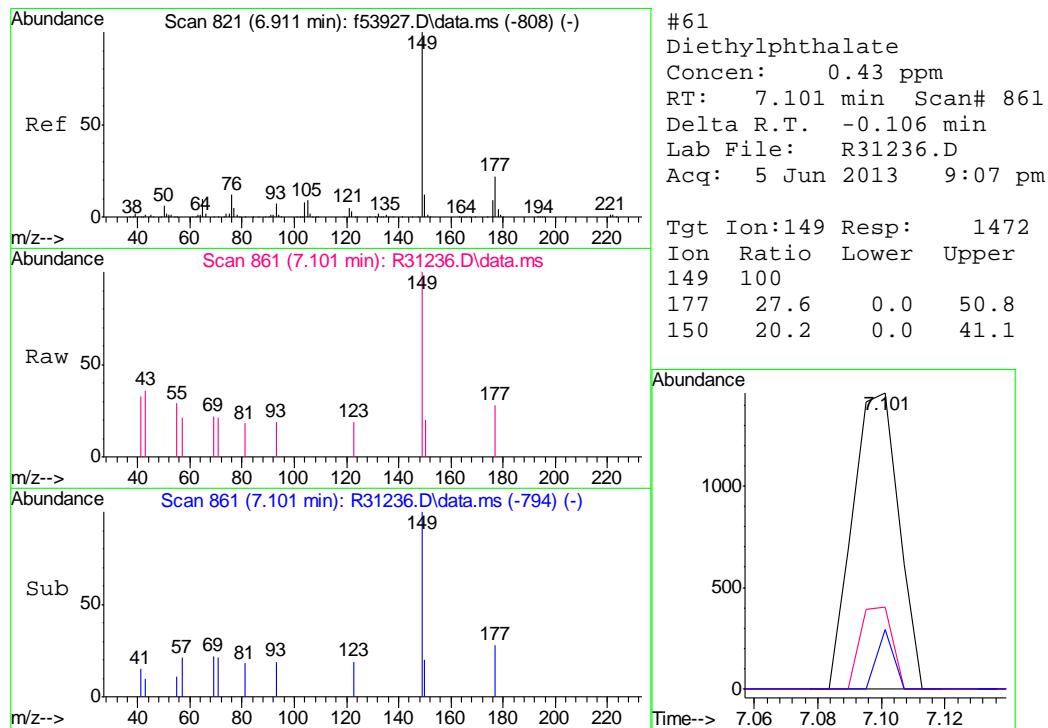
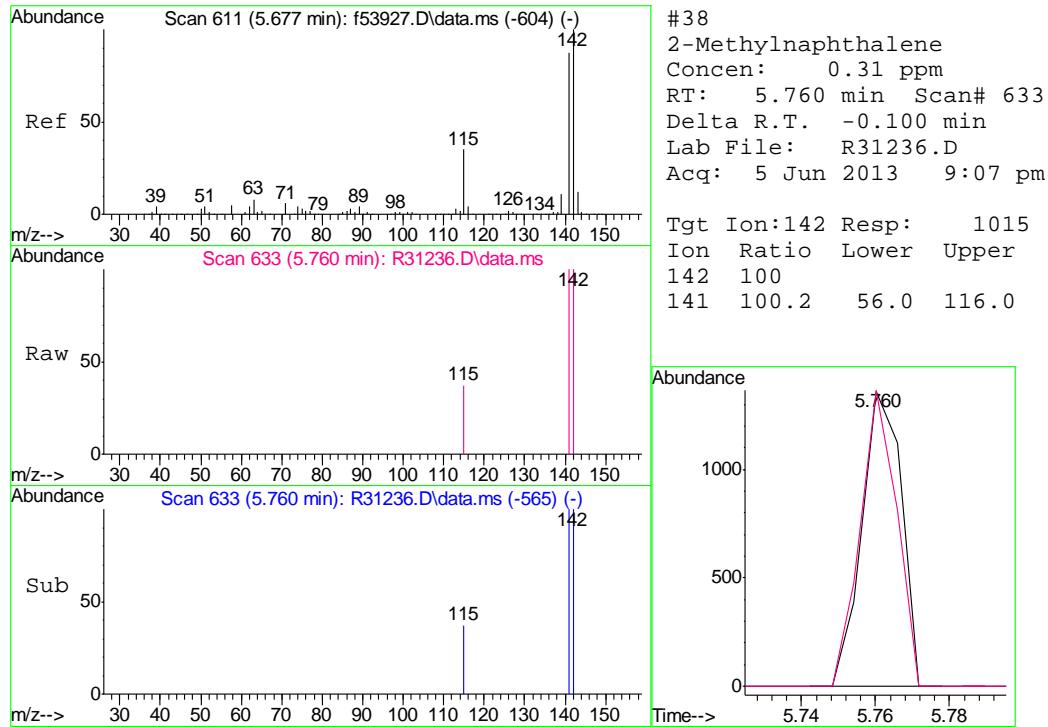
(#) = qualifier out of range (m) = manual integration (+) = signals summed

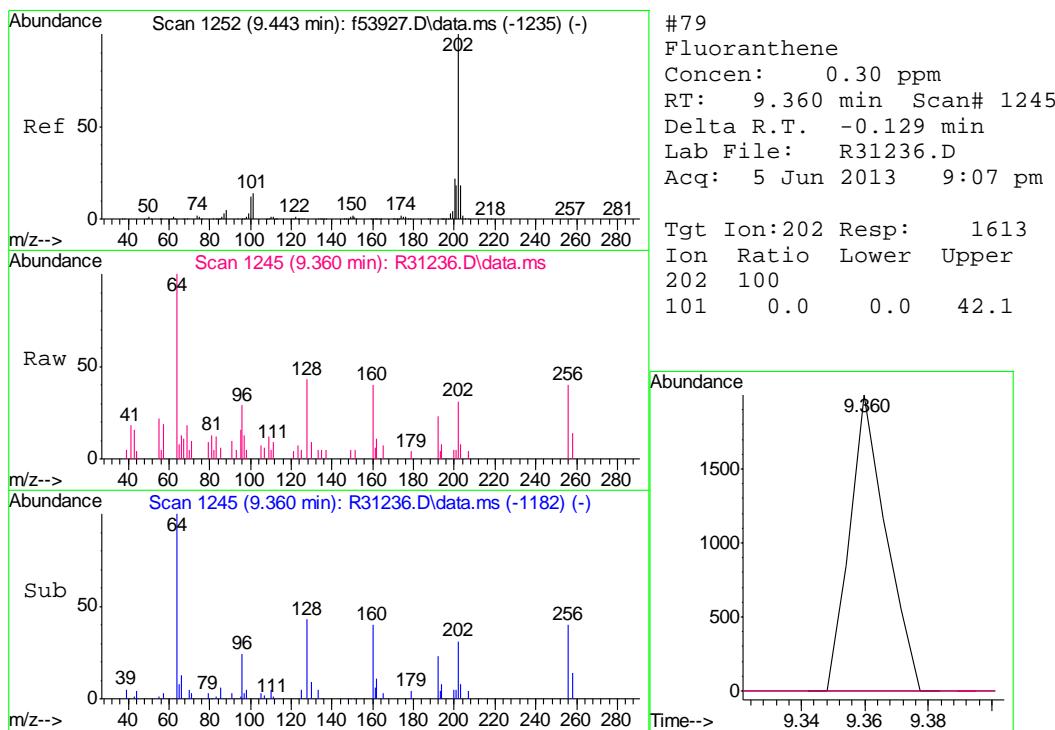
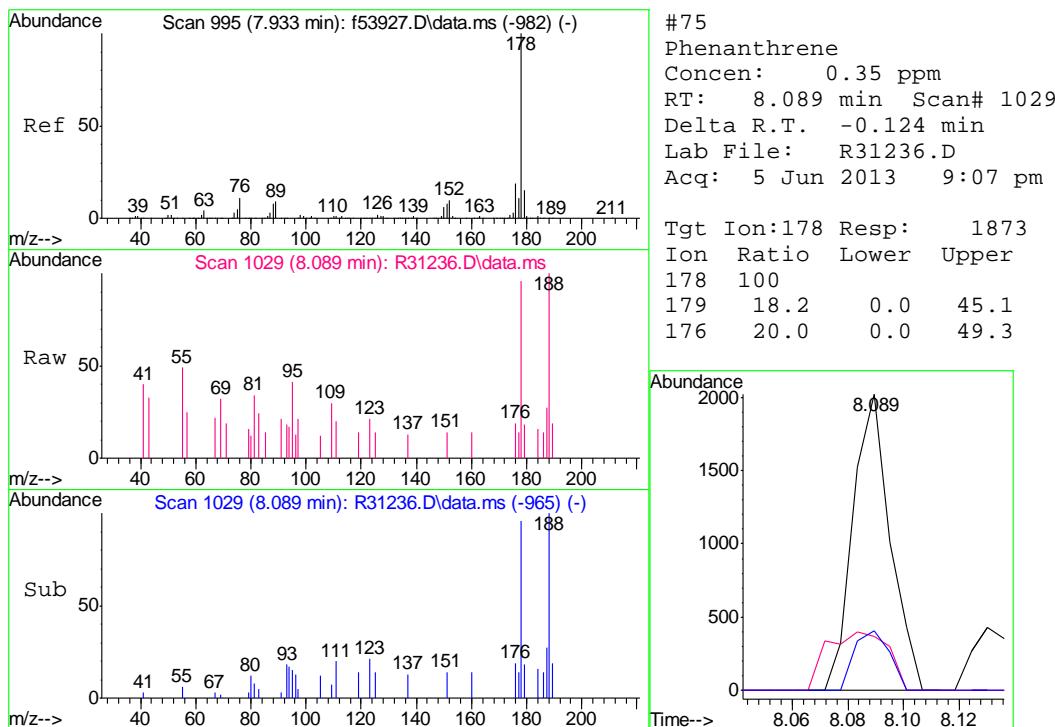
Quantitation Report (QT Reviewed)

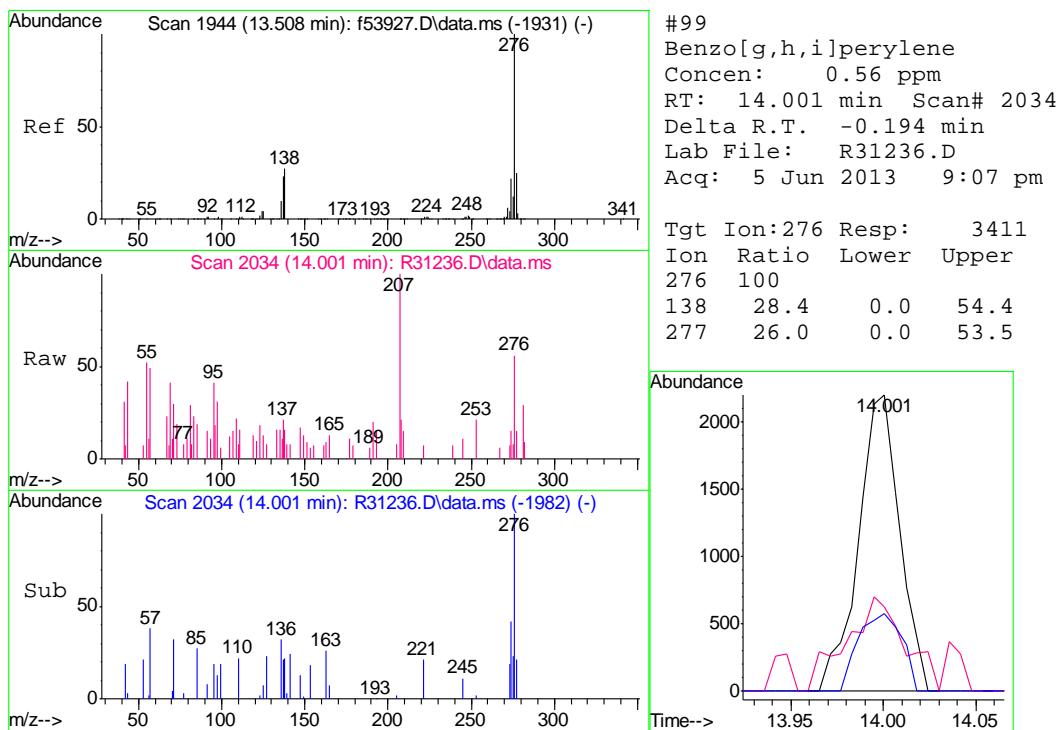
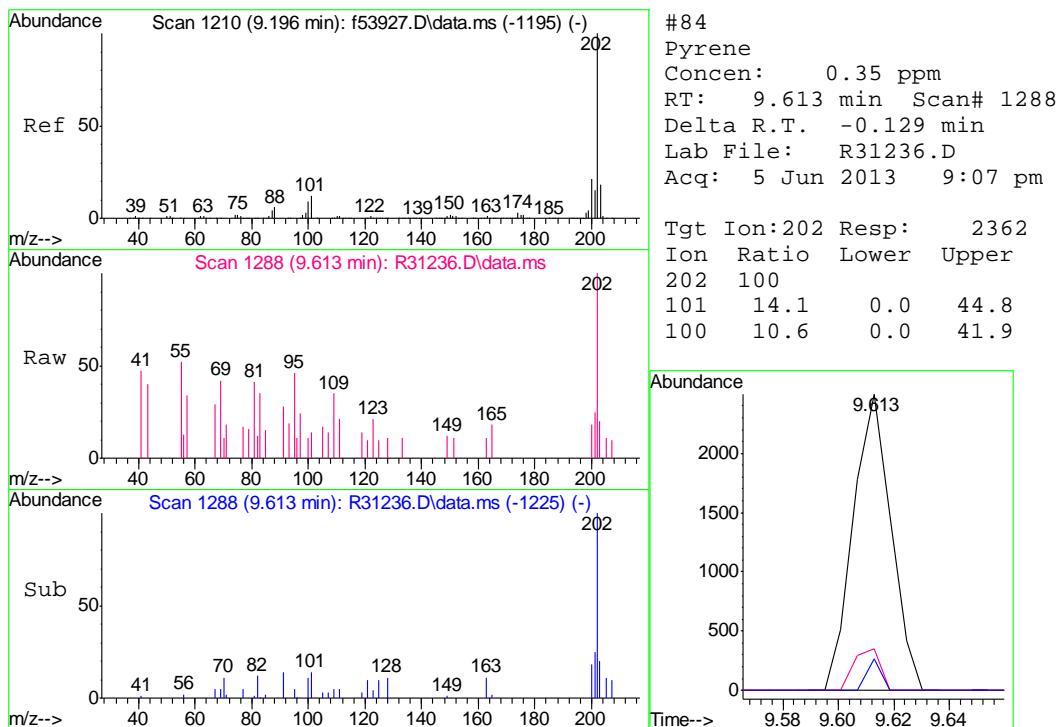
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 Data File : R31236.D
 Acq On : 5 Jun 2013 9:07 pm
 Operator : kristinr
 Sample : jb37868-2
 Misc : op33467,msr1136,20.33,,,1,1
 ALS Vial : 17 Sample Multiplier: 1

Quant Time: Jun 14 10:27:14 2013
 Quant Method : C:\msdchem\1\methods\R130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Wed Jun 12 13:16:47 2013
 Response via : Initial Calibration









Quantitation Report (QT Reviewed)

Manual Integrations
APPROVED
(compounds with "m" flag)

Doug Yargeau
06/15/13 06:51

Data Path : C:\msdchem\1\data\R130605\
Data File : R31237.D
Acq On : 5 Jun 2013 9:31 pm
Operator : kristinr
Sample : jb37868-3
Misc : op33467,msrl1136,20.35,,,1,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Jun 14 10:27:59 2013
Quant Method : C:\msdchem\1\methods\R130530_8270+.m
Quant Title : SW-864 Method 8270
QLast Update : Wed Jun 12 13:16:47 2013
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.107	152	48045	40.00	ppm	-0.10
21) 1,4-Dichlorobenzene-d4A	4.107	152	48045	40.00	PPM	#-0.16
23) Naphthalene-d8	5.160	136	184866	40.00	ppm	-0.10
41) Naphthalene-d8a	5.160	136	184866	40.00	ppm	#-0.17
43) Acenaphthene-d10	6.684	164	110353	40.00	ppm	-0.11
65) Acenaphthene-d10a	6.684	164	110353	40.00	ppm	#-0.18
67) Phenanthrene-d10	8.066	188	193141m	40.00	ppm	-0.12
80) Phenanthrene-d10a	8.066	188	193917m	40.00	ppm	-0.20
82) Chrysene-d12	11.019	240	221651	40.00	ppm	-0.13
92) Perylene-d12	12.607	264	223742	40.00	ppm	-0.14
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.172	112	40481	25.75	ppm	-0.09
Spiked Amount 100.000	Range 30 - 130		Recovery =	25.75%#		
7) Phenol-d5	3.854	99	48298	23.90	ppm	-0.09
Spiked Amount 100.000	Range 30 - 130		Recovery =	23.90%#		
24) Nitrobenzene-d5	4.578	82	44072	23.94	ppm	-0.10
Spiked Amount 50.000	Range 30 - 130		Recovery =	47.88%		
48) 2-Fluorobiphenyl	6.095	172	103735	26.71	ppm	-0.10
Spiked Amount 50.000	Range 30 - 130		Recovery =	53.42%		
71) 2,4,6-Tribromophenol	7.413	330	17290	27.86	ppm	-0.11
Spiked Amount 100.000	Range 30 - 130		Recovery =	27.86%#		
85) Terphenyl-d14	9.801	244	158261	31.70	ppm	-0.12
Spiked Amount 50.000	Range 30 - 130		Recovery =	63.40%		
<hr/>						
Target Compounds						
33) Naphthalene	5.172	128	1064	0.21	ppm	69
38) 2-Methylnaphthalene	5.760	142	2210	0.65	ppm	91
61) Diethylphthalate	7.101	149	1514	0.41	ppm	87
78) Di-n-butylphthalate	8.713	149	7457	1.18	ppm	99
91) bis(2-Ethylhexyl)phtha...	11.095	149	1073	0.25	ppm	96

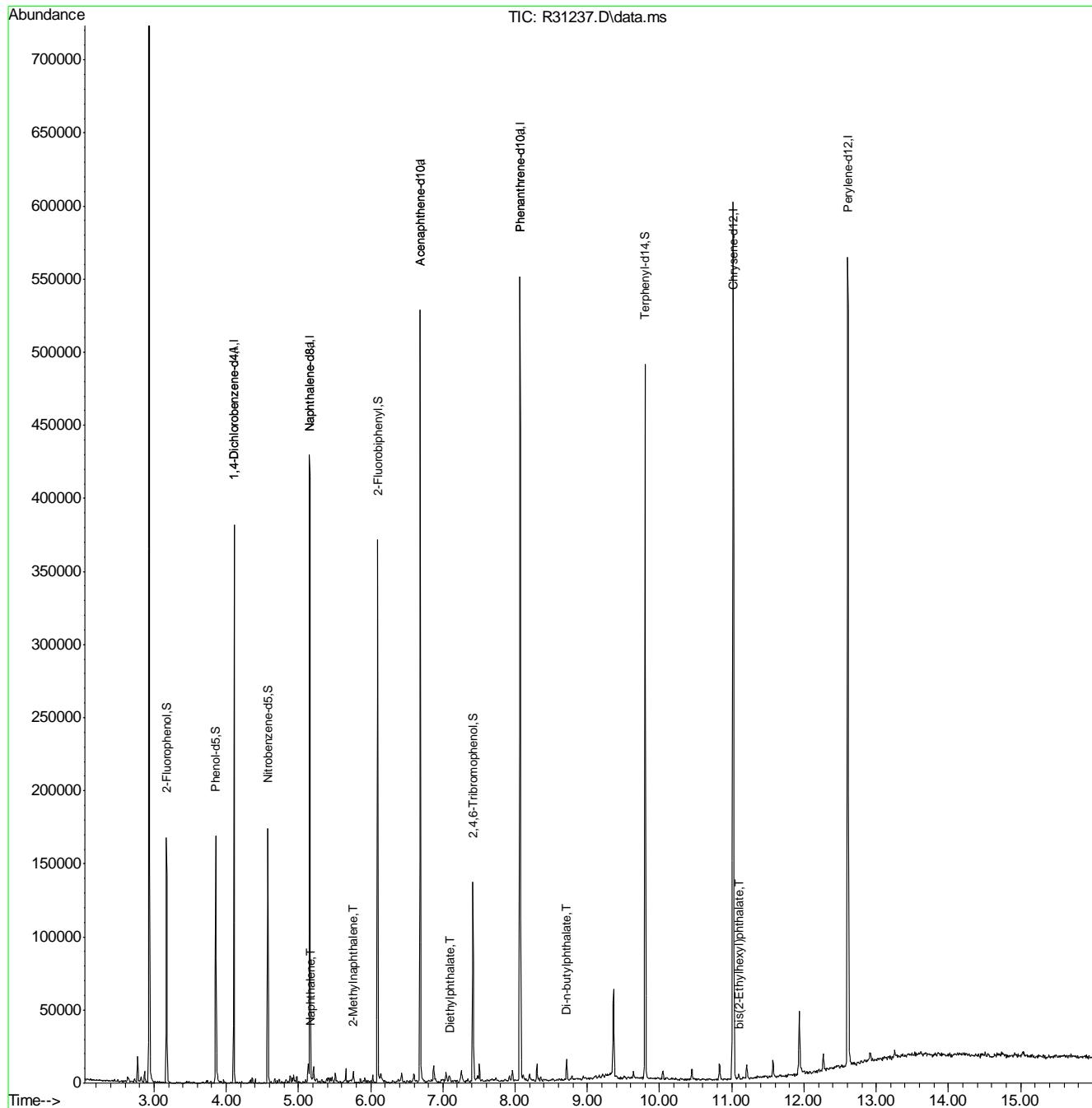
(#) = qualifier out of range (m) = manual integration (+) = signals summed

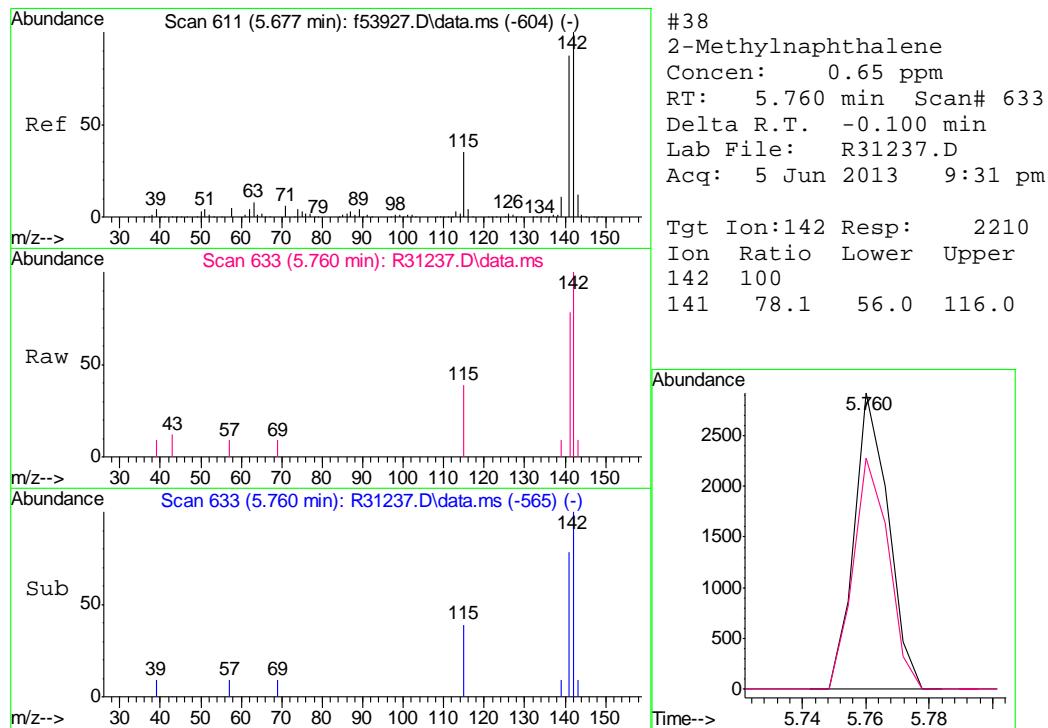
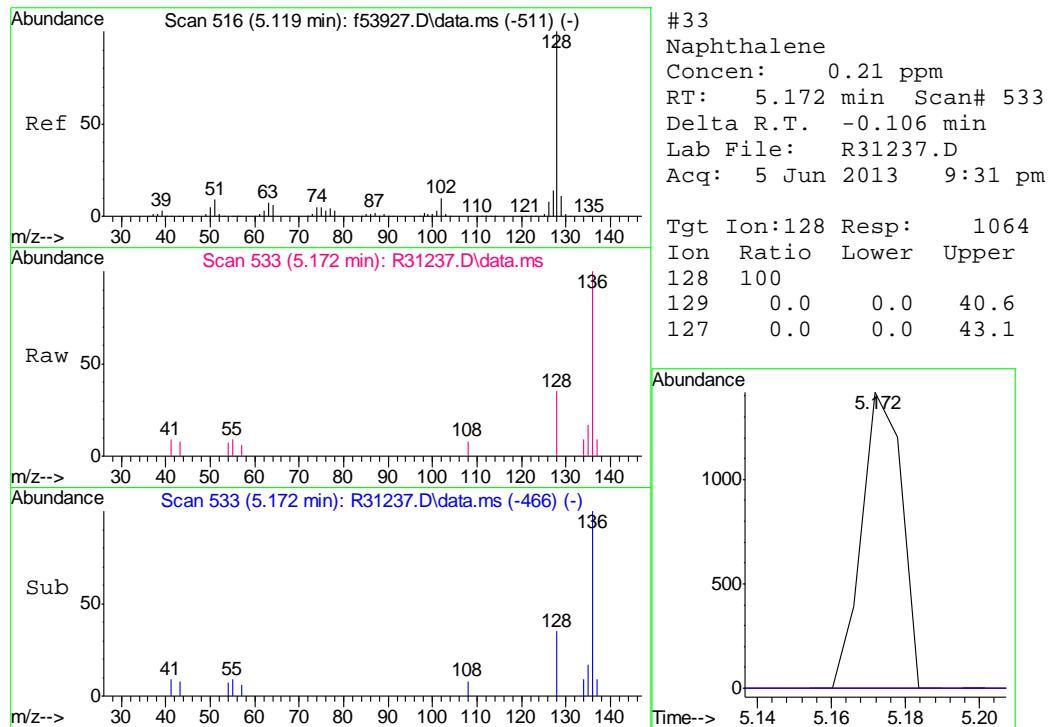
10.1.3
10

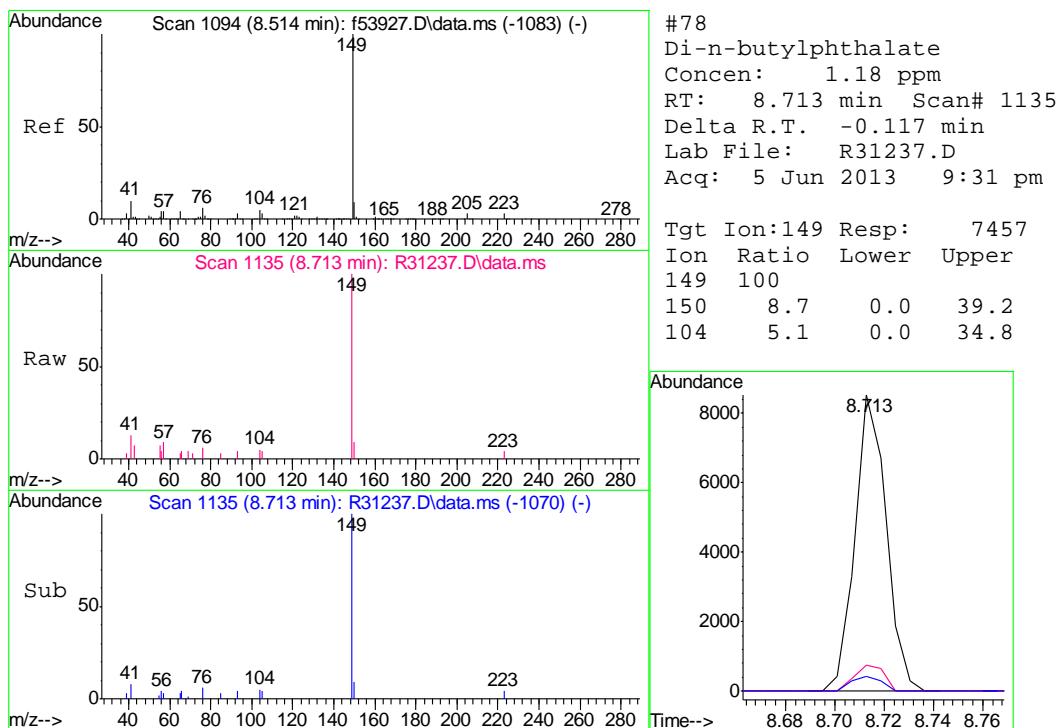
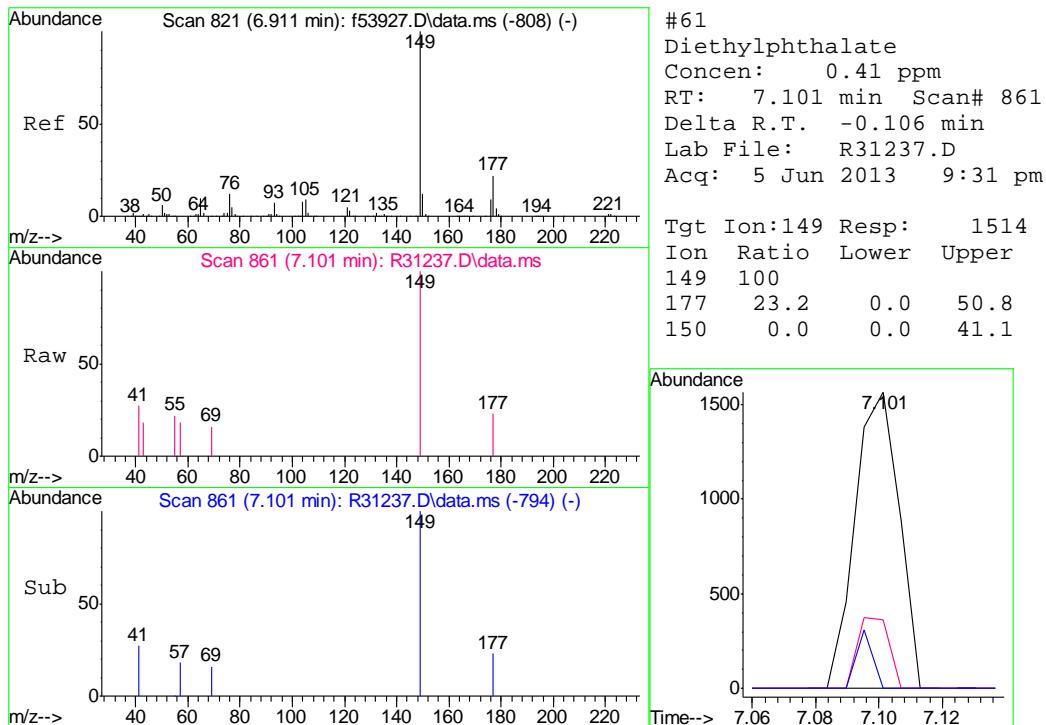
Quantitation Report (QT Reviewed)

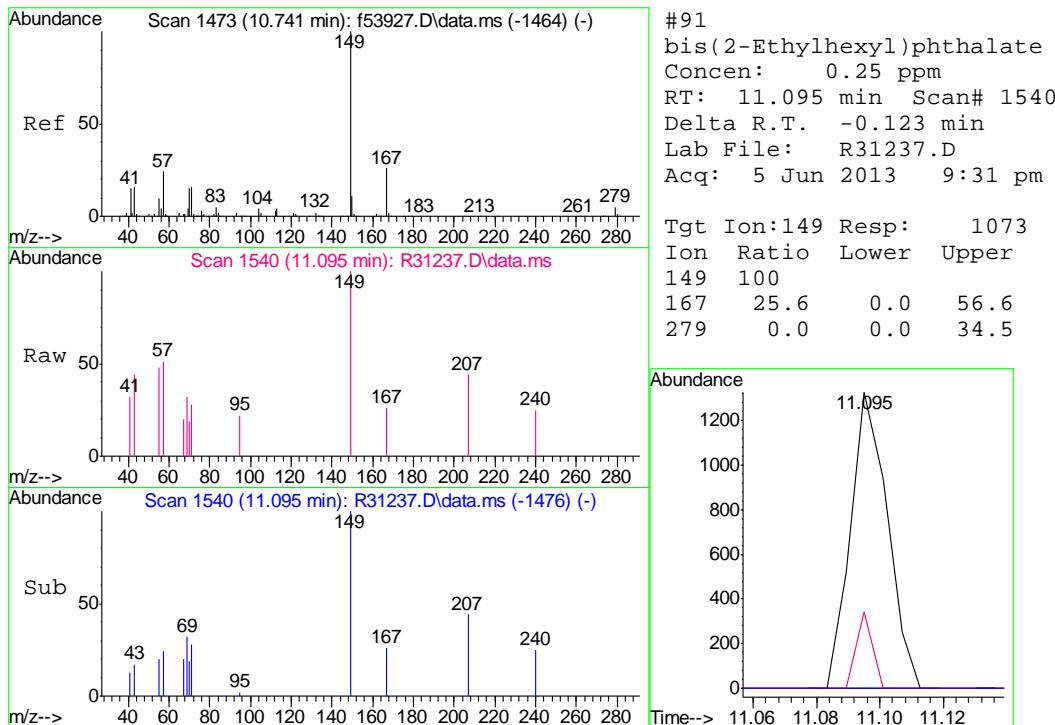
Data Path : C:\msdchem\1\data\R130605\
 Data File : R31237.D
 Acq On : 5 Jun 2013 9:31 pm
 Operator : kristinr
 Sample : jb37868-3
 Misc : op33467,msrl1136,20.35,,,1,1
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Jun 14 10:27:59 2013
 Quant Method : C:\msdchem\1\methods\R130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Wed Jun 12 13:16:47 2013
 Response via : Initial Calibration









Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\R130605\
 Data File : R31226.D
 Acq On : 5 Jun 2013 5:15 pm
 Operator : kristinr
 Sample : op33467-mb
 Misc : op33467,msrl1136,20.64,,,1,1
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jun 13 13:10:54 2013
 Quant Method : C:\msdchem\1\methods\R130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Wed Jun 12 13:16:47 2013
 Response via : Initial Calibration

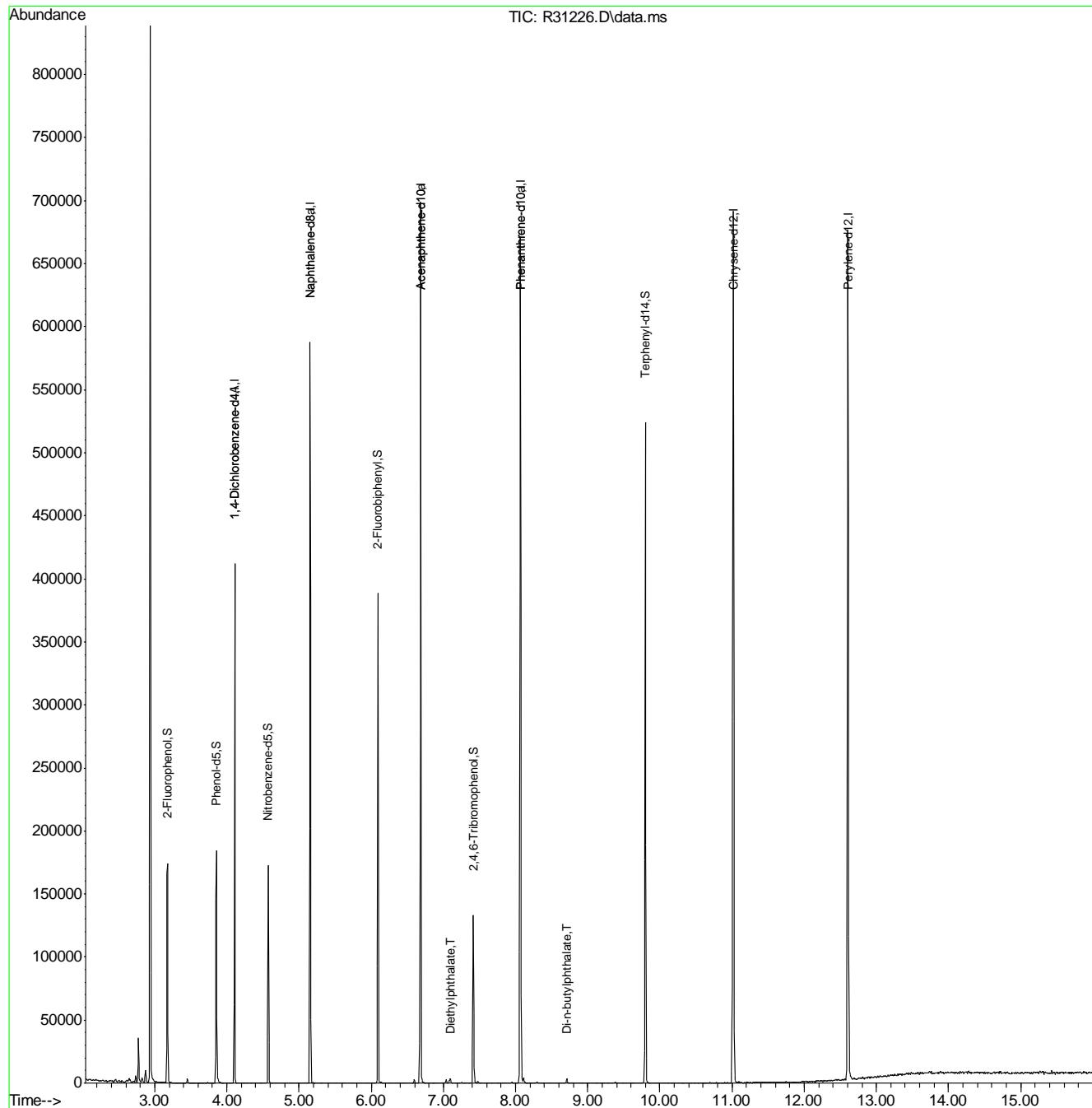
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.107	152	55168	40.00	ppm	-0.10
21) 1,4-Dichlorobenzene-d4A	4.107	152	55168	40.00	PPM	#-0.16
23) Naphthalene-d8	5.154	136	214974	40.00	ppm	-0.11
41) Naphthalene-d8a	5.154	136	214974	40.00	ppm	#-0.17
43) Acenaphthene-d10	6.684	164	129379	40.00	ppm	-0.11
65) Acenaphthene-d10a	6.684	164	129379	40.00	ppm	#-0.18
67) Phenanthrene-d10	8.066	188	228949m	40.00	ppm	-0.12
80) Phenanthrene-d10a	8.066	188	229459m	40.00	ppm	-0.20
82) Chrysene-d12	11.019	240	275927	40.00	ppm	-0.13
92) Perylene-d12	12.607	264	260339	40.00	ppm	-0.14
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.178	112	42974	23.81	ppm	-0.09
Spiked Amount 100.000	Range 30 - 130		Recovery =	23.81%#		
7) Phenol-d5	3.854	99	53535	23.07	ppm	-0.09
Spiked Amount 100.000	Range 30 - 130		Recovery =	23.07%#		
24) Nitrobenzene-d5	4.572	82	48799	22.80	ppm	-0.11
Spiked Amount 50.000	Range 30 - 130		Recovery =	45.60%		
48) 2-Fluorobiphenyl	6.090	172	112148	24.63	ppm	-0.11
Spiked Amount 50.000	Range 30 - 130		Recovery =	49.26%		
71) 2,4,6-Tribromophenol	7.413	330	17042	23.17	ppm	-0.11
Spiked Amount 100.000	Range 30 - 130		Recovery =	23.17%#		
85) Terphenyl-d14	9.801	244	183701	29.56	ppm	-0.12
Spiked Amount 50.000	Range 30 - 130		Recovery =	59.12%		
<hr/>						
Target Compounds				Qvalue		
61) Diethylphthalate	7.095	149	1787	0.42	ppm	90
78) Di-n-butylphthalate	8.713	149	2636	0.35	ppm	95

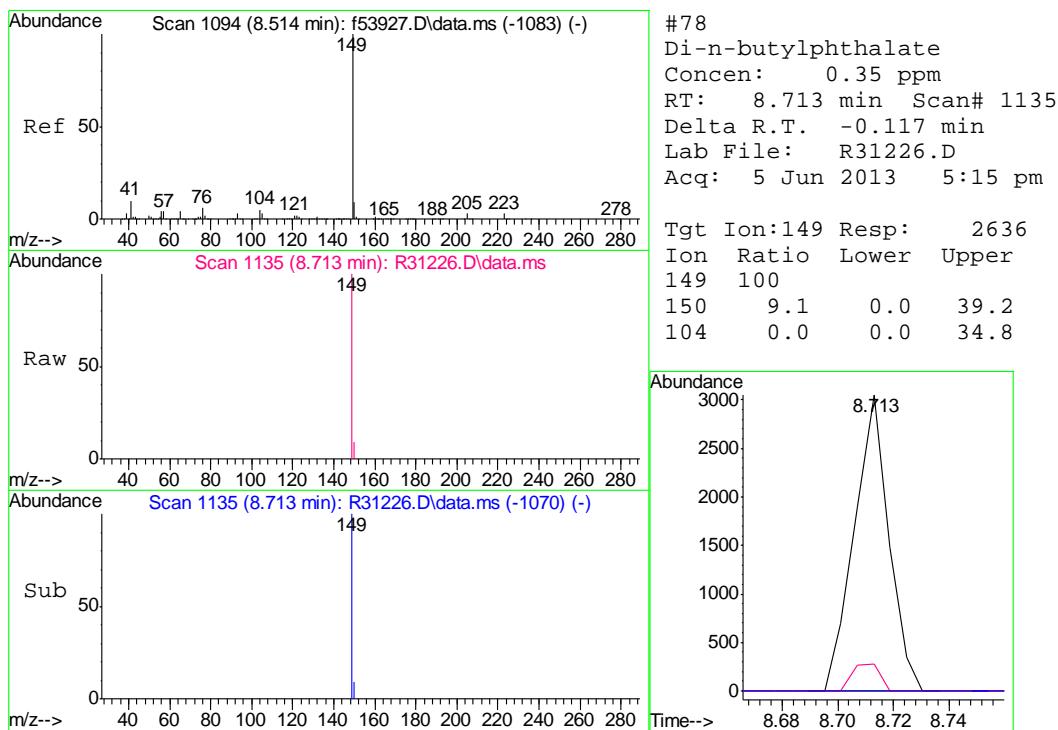
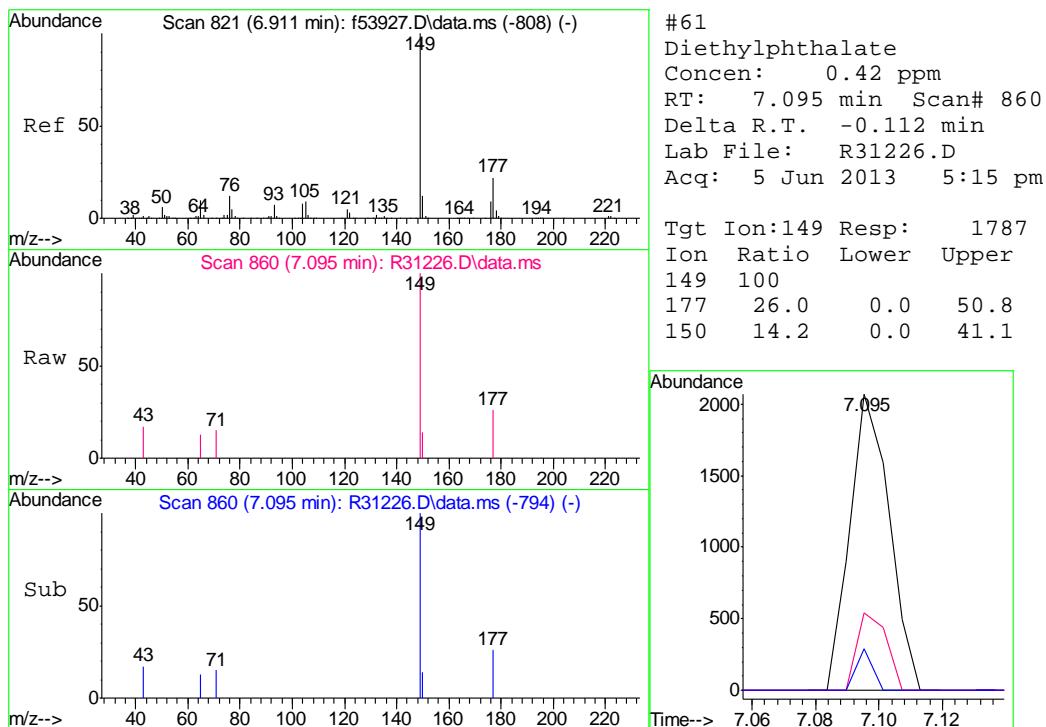
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\R130605\
 Data File : R31226.D
 Acq On : 5 Jun 2013 5:15 pm
 Operator : kristinr
 Sample : op33467-mb
 Misc : op33467,msr1136,20.64,,,1,1
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jun 13 13:10:54 2013
 Quant Method : C:\msdchem\1\methods\R130530_8270+.m
 Quant Title : SW-864 Method 8270
 QLast Update : Wed Jun 12 13:16:47 2013
 Response via : Initial Calibration







GC Volatiles

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

Method Blank Summary

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33357-MB	YZ80872.D	1	05/30/13	CZ	05/28/13	OP33357	GYZ7155

The QC reported here applies to the following samples:

Method: SW846 8011

JB37868-1, JB37868-2, JB37868-3

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	2.4	0.94	ug/kg	

CAS No.	Surrogate Recoveries	Limits
460-00-4	Bromofluorobenzene (S)	137%
460-00-4	Bromofluorobenzene (S)	100% 61-167%

Blank Spike Summary

Page 1 of 1

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33357-BS	YZ80885.D	1	05/30/13	CZ	05/28/13	OP33357	GYZ7155

The QC reported here applies to the following samples:

Method: SW846 8011

JB37868-1, JB37868-2, JB37868-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
106-93-4	1,2-Dibromoethane	33	44.2	134	56-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	127%	61-167%
460-00-4	Bromofluorobenzene (S)	89%	61-167%

11.2.1
11

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33357-MS	YZ80883.D	1	05/30/13	CZ	05/28/13	OP33357	GYZ7155
OP33357-MSD	YZ80884.D	1	05/30/13	CZ	05/28/13	OP33357	GYZ7155
JB37622-1	YZ80874.D	1	05/30/13	CZ	05/28/13	OP33357	GYZ7155

The QC reported here applies to the following samples:

Method: SW846 8011

JB37868-1, JB37868-2, JB37868-3

CAS No.	Compound	JB37622-1		Spike	MS	MS	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	%		
106-93-4	1,2-Dibromoethane	ND		40.2	53.0	132	56.4	139	6	48-141/27
CAS No.	Surrogate Recoveries		MS	MSD		JB37622-1	Limits			
460-00-4	Bromofluorobenzene (S)		128%	138%		129%	61-167%			
460-00-4	Bromofluorobenzene (S)		82%	89%		86%	61-167%			

* = Outside of Control Limits.

11.3.1
11

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8011

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 ^a	S1 ^b
JB37868-1	YZ80880.D	145.0	101.0
JB37868-2	YZ80881.D	141.0	98.0
JB37868-3	YZ80882.D	144.0	102.0
OP33357-BS	YZ80885.D	127.0	89.0
OP33357-MB	YZ80872.D	137.0	100.0
OP33357-MS	YZ80883.D	128.0	82.0
OP33357-MSD	YZ80884.D	138.0	89.0

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Bromofluorobenzene (S) 61-167%

- (a) Recovery from GC signal #2
- (b) Recovery from GC signal #1

11.4.1
11

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	GYZ7155-ICC7155	Injection Date:	05/30/13
Lab File ID:	YZ80867.D	Injection Time:	13:17
Instrument ID:	GCYZ	Method:	SW846 8011

S1 ^a
RT S1 ^b
RT

Check Std	4.01	3.81
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
OP33357-MB	YZ80872.D	05/30/13	15:33	4.01	3.81
JB37622-1	YZ80874.D	05/30/13	16:28	4.01	3.81
ZZZZZZ	YZ80875.D	05/30/13	16:55	4.01	3.81
ZZZZZZ	YZ80876.D	05/30/13	17:22	4.01	3.81

Surrogate Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

11.5.1
11

GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	GYZ7155-CC7155	Injection Date:	05/30/13
Lab File ID:	YZ80877.D	Injection Time:	17:49
Instrument ID:	GCYZ	Method:	SW846 8011

S1 ^a
RT S1 ^b
RT

Check Std	4.01	3.81
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 ^a RT	S1 ^b RT
ZZZZZZ	YZ80878.D	05/30/13	18:17	4.01	3.80
ZZZZZZ	YZ80879.D	05/30/13	19:05	4.00	3.81
JB37868-1	YZ80880.D	05/30/13	19:32	4.01	3.81
JB37868-2	YZ80881.D	05/30/13	19:59	4.01	3.81
JB37868-3	YZ80882.D	05/30/13	20:26	4.01	3.80
OP33357-MS	YZ80883.D	05/30/13	20:52	4.00	3.80
OP33357-MSD	YZ80884.D	05/30/13	21:20	4.00	3.80
OP33357-BS	YZ80885.D	05/30/13	21:47	4.01	3.80
GYZ7155-ECC715Y	YZ80886.D	05/30/13	22:13	4.00	3.80

Surrogate
Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2
- (b) Retention time from GC signal #1

11.5.2
11

Initial Calibration Summary

Job Number: JB37868

Sample: GYZ7155-ICC7155

Account: ALNJ Accutest New Jersey

Lab FileID: YZ80867.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Response Factor Report GCY2

Method : C:\msdchem\1\METHODS\Es130330.M (RTE Integrator)

Title : EDB /pest2/pest

Last Update : Thu May 30 15:02:08 2013

Response via : Initial Calibration

Calibration Files

1	=yz80865.D	2	=yz80866.D	3	=yz80867.D	4	=yz80868.D
5	=yz80869.D	6	=yz80870.D				

	Compound	1	2	3	4	5	6	Avg	%RSD
1)	1,2-Dibromoethane	6.948	6.934	7.020	7.197	6.262	5.550	6.652 E3	9.43
2)	s 4-Bromofluorobenzen	0.496	0.566	0.685	0.968	1.539	2.374	1.105 E3	65.95
	----- Quadratic regression -----							Coefficient =	0.9967
	Response Ratio =	9649.25251	+ 529.65085	*A	+ -0.43017	*A^2			
3)	1,2-Dibromo-3-chlor	1.390	1.366	1.381	1.419	1.459	1.520	1.423 E4	4.08

Signal #2

1)	1,2-Dibromoethane	7.347	7.827	7.977	8.501	8.406	8.126	8.031 E3	5.23
2)	s 4-Bromofluorobenzen	4.859	5.213	5.702	6.229	7.483	9.296	6.464 E2	25.73
	----- Quadratic regression -----							Coefficient =	0.9999
	Response Ratio =	2020.15551	+ 542.10132	*A	+ -0.33809	*A^2			

3)	1,2-Dibromo-3-chlor	1.488	1.489	1.527	1.598	1.668	1.741	1.585 E4	6.53
----	---------------------	-------	-------	-------	-------	-------	-------	----------	------

(#= Out of Range)

Es130330.M

Thu May 30 15:26:56 2013

11.6.1

Initial Calibration Verification

Job Number: JB37868

Sample: GYZ7155-ICV7155

Account: ALNJ Accutest New Jersey

Lab FileID: YZ80871.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\yz...30\yz80871.D\ECD1A.CH Vial: 97
 Acq On : 30 May 2013 3:06 pm Operator: caobinz
 Sample : icv7155-20.edb 20-icv Inst : GCYZ
 Misc : op33357,gyz7155,30,,,50,,soil Multiplr: 1.00
 IntFile : rteint.p

Data File : C:\msdchem\1\DATA\yz130530\yz80871.D\ECD2B.CH Vial: 97
 Acq On : 30 May 2013 3:06 pm Operator: caobinz
 Sample : edb 20-icv Inst : GCYZ
 Misc : op33357,gyz7155,30,,,50,,soil Multiplr: 1.00
 IntFile : rteint2.p

Method : C:\msdchem\1\METHODS\Es130330.M (RTE Integrator)
 Title : EDB /pest2/pest
 Last Update : Thu May 30 15:02:08 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
1	1,2-Dibromoethane	6.652	6.781 E3	-1.9	98	0.00	2.66-	2.72
2 s	4-Bromofluorobenzene	100.000	90.926	9.1	96	0.00	3.77-	3.83
3	1,2-Dibromo-3-chloropr	14.227	13.248 E3	6.9	97	0.00	5.60-	5.66
***** Signal #2 *****								
1	1,2-Dibromoethane	8.031	8.246 E3	-2.7	105	0.00	2.70-	2.76
2 s	4-Bromofluorobenzene	100.000	101.609	-1.6	103	0.00	3.98-	4.04
3	1,2-Dibromo-3-chloropr	15.850	14.946 E3	5.7	100	0.00	5.51-	5.57

(#) = Out of Range
 yz80866.D Es130330.M

SPCC's out = 0 CCC's out = 0
 Thu May 30 15:26:31 2013

Continuing Calibration Summary

Job Number: JB37868

Sample: GYZ7155-CC7155

Account: ALNJ Accutest New Jersey

Lab FileID: YZ80877.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\yz...30\yz80877.D\ECD1A.CH Vial: 92
 Acq On : 30 May 2013 5:49 pm Operator: caobinz
 Sample : CC7155-20,edb 20 Inst : GCYZ
 Misc : op33357,gyz7155,30.31,,,50,,soil Multiplr: 1.00
 IntFile : rteint.p

Data File : C:\msdchem\1\DATA\yz130530\yz80877.D\ECD2B.CH Vial: 92
 Acq On : 30 May 2013 5:49 pm Operator: caobinz
 Sample : edb 20 Inst : GCYZ
 Misc : op33357,gyz7155,30.31,,,50,,soil Multiplr: 1.00
 IntFile : rteint2.p

Method : C:\msdchem\1\METHODS\Es130330.M (RTE Integrator)
 Title : EDB /pest2/pest
 Last Update : Thu May 30 15:02:08 2013
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
<hr/>								
1	1,2-Dibromoethane	6.652	7.064 E3	-6.2	102	0.00	2.66-	2.72
<hr/>								
2 s	4-Bromofluorobenzene	100.000	89.659	10.3	95	0.00	3.78-	3.84
<hr/>								
3	1,2-Dibromo-3-chloropr	14.227	14.239 E3	-0.1	104	0.00	5.60-	5.66
<hr/>								
***** Signal #2 *****								
1	1,2-Dibromoethane	8.031	8.608 E3	-7.2	110	0.00	2.70-	2.76
<hr/>								
2 s	4-Bromofluorobenzene	100.000	106.234	-6.2	107	0.00	3.98-	4.04
<hr/>								
3	1,2-Dibromo-3-chloropr	15.850	16.325 E3	-3.0	110	0.00	5.51-	5.57
<hr/>								
<hr/>								

(#) = Out of Range
 yz80866.D Es130330.M

SPCC's out = 0 CCC's out = 0
 Thu May 30 18:28:36 2013

Continuing Calibration Summary

Page 1 of 1

Job Number: JB37868

Sample: GYZ7155-ECC7155

Account: ALNJ Accutest New Jersey

Lab FileID: YZ80886.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : T:\1\DATA\yz130530\yz80886.D\ECD1A.CH Vial: 92
Acq On : 30 May 2013 10:13 pm Operator: caobinz
Sample : ecc7155-20,edb 20 Inst : GCYZ
Misc : op33357,gyz7155,30.31,,,50,,soil Multiplr: 1.00
IntFile : rteint.p

Data File : T:\1\DATA\yz130530\yz80886.D\ECD2B.CH Vial: 92
Acq On : 30 May 2013 10:13 pm Operator: caobinz
Sample : edb 20 Inst : GCYZ
Misc : op33357,gyz7155,30.31,,,50,,soil Multiplr: 1.00
IntFile : rteint2.p

Method : T:\1\METHODS\Es130330.M (RTE Integrator)
Title : EDB /pest2/pest
Last Update : Thu May 30 15:02:08 2013
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area	% Dev(min)	RT	Window
1	1,2-Dibromoethane	6.652	7.068 E3	-6.3	102	0.00	2.66-	2.72
2 s	4-Bromofluorobenzene	100.000	91.370	8.6	96	0.00	3.77-	3.83
3	1,2-Dibromo-3-chloropr	14.227	14.537 E3	-2.2	106	0.00	5.60-	5.66
***** Signal #2 *****								
1	1,2-Dibromoethane	8.031	8.950 E3	-11.4	114	0.00	2.70-	2.76
2 s	4-Bromofluorobenzene	100.000	109.828	-9.8	110	0.00	3.97-	4.03
3	1,2-Dibromo-3-chloropr	15.850	16.969 E3	-7.1	114	0.00	5.51-	5.57

(#) = Out of Range
yz80886.D Es130330.M

SPCC's out = 0 CCC's out = 0
Fri May 31 09:46:53 2013

11.6.4

11



GC Volatiles

Raw Data

(Accutest Labs of New England, Inc.)

Quantitation Report (QT Reviewed)

Data Path : T:\1\DATA\yz130530\
 Data File : yz80880.D
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
 Acq On : 30 May 2013 7:32 pm
 Operator : caobinz
 Sample : jb37868-1
 Misc : op33357,gyz7155,30.10,,,50,,soil
 ALS Vial : 10 Sample Multiplier: 1

Integration File signal 1: rteint.p
 Integration File signal 2: rteint2.p
 Quant Time: May 31 09:41:37 2013
 Quant Method : T:\1\METHODS\Es130330.M
 Quant Title : EDB /pest2/pest
 QLast Update : Thu May 30 15:02:08 2013
 Response via : Initial Calibration
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds
 2) s 4-Bromofl... 3.806 4.006 35305 39461 50.511 72.329 #
 Spiked Amount 50.000 Range 40 - 168 Recovery = 101.02% 144.66%

Target Compounds
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

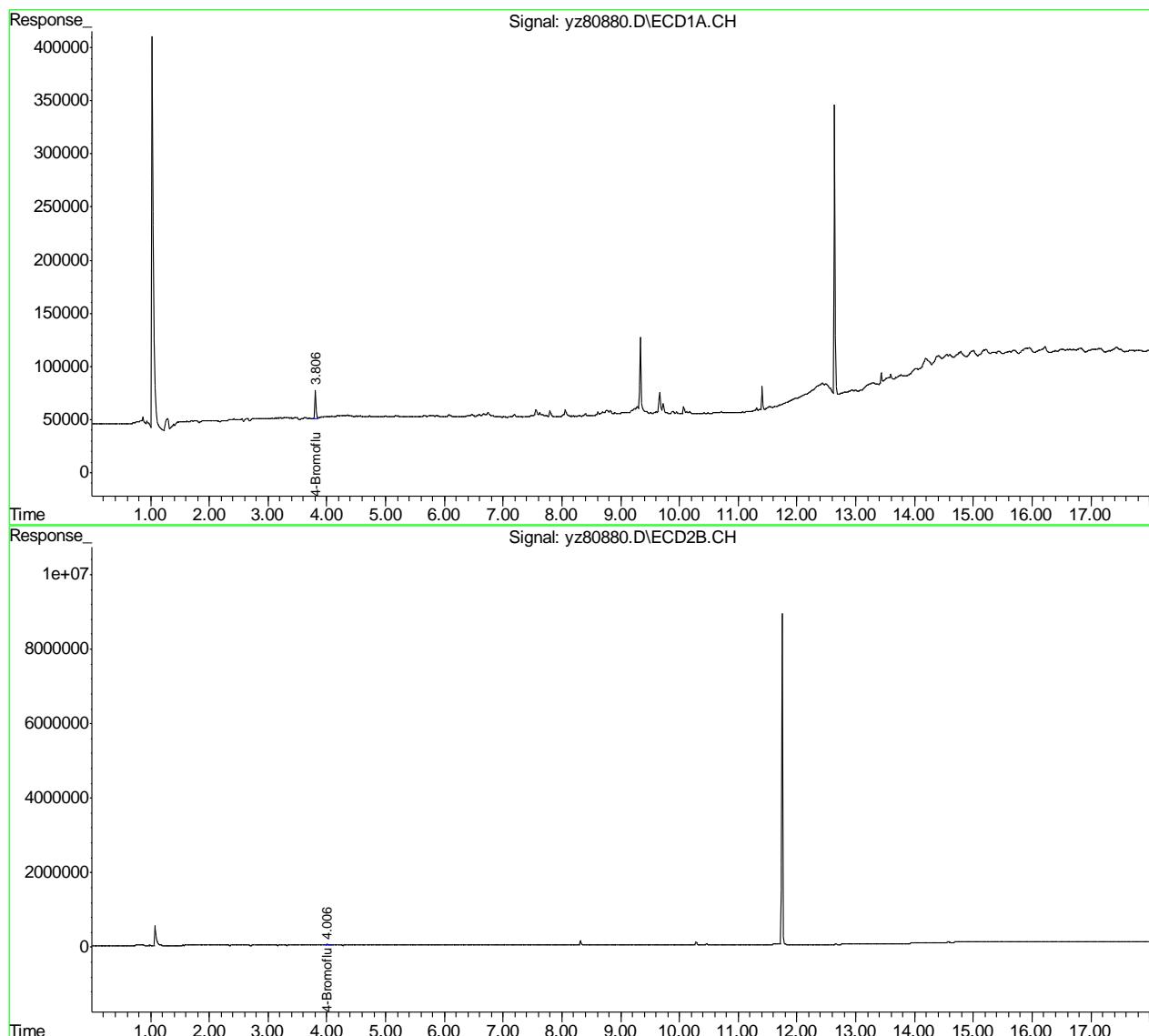
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

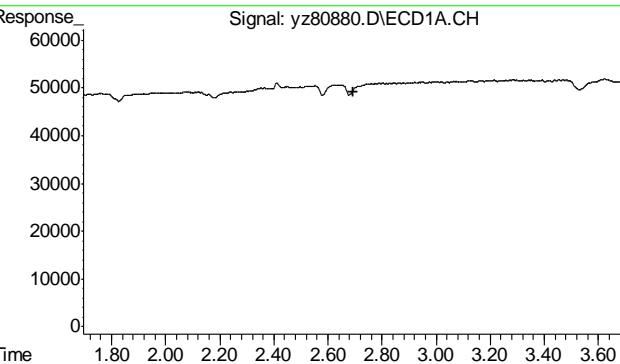
Quantitation Report (QT Reviewed)

Data Path : T:\1\DATA\yz130530\
 Data File : yz80880.D
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
 Acq On : 30 May 2013 7:32 pm
 Operator : caobinz
 Sample : jb37868-1
 Misc : op33357,gyz7155,30.10,,,50,,soil
 ALS Vial : 10 Sample Multiplier: 1

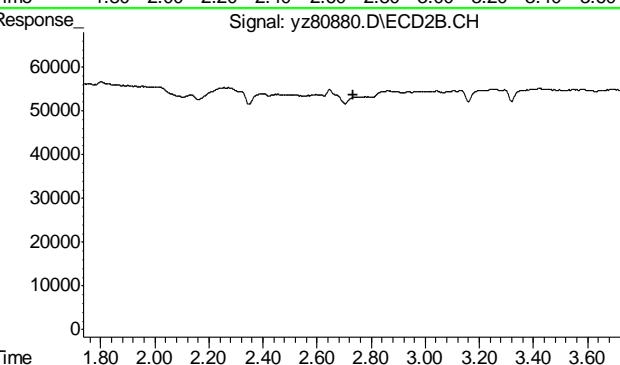
Integration File signal 1: rteint.p
 Integration File signal 2: rteint2.p
 Quant Time: May 31 09:41:37 2013
 Quant Method : T:\1\METHODS\Es130330.M
 Quant Title : EDB /pest2/pest
 QLast Update : Thu May 30 15:02:08 2013
 Response via : Initial Calibration
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

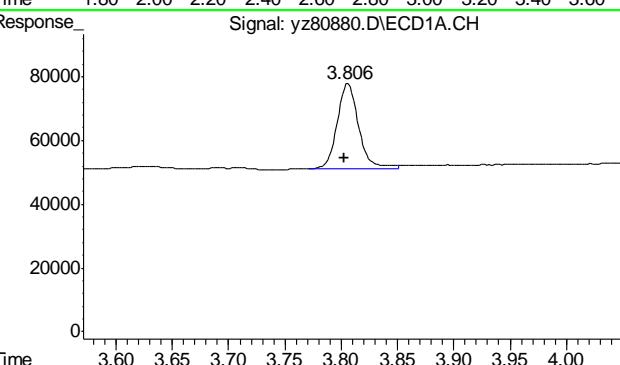




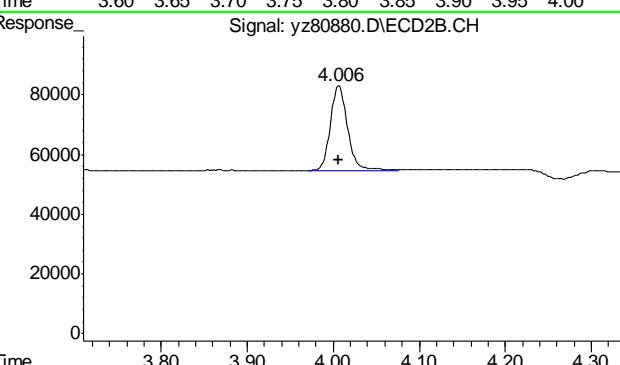
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 2.695 min
Response: 0
Conc: N.D.



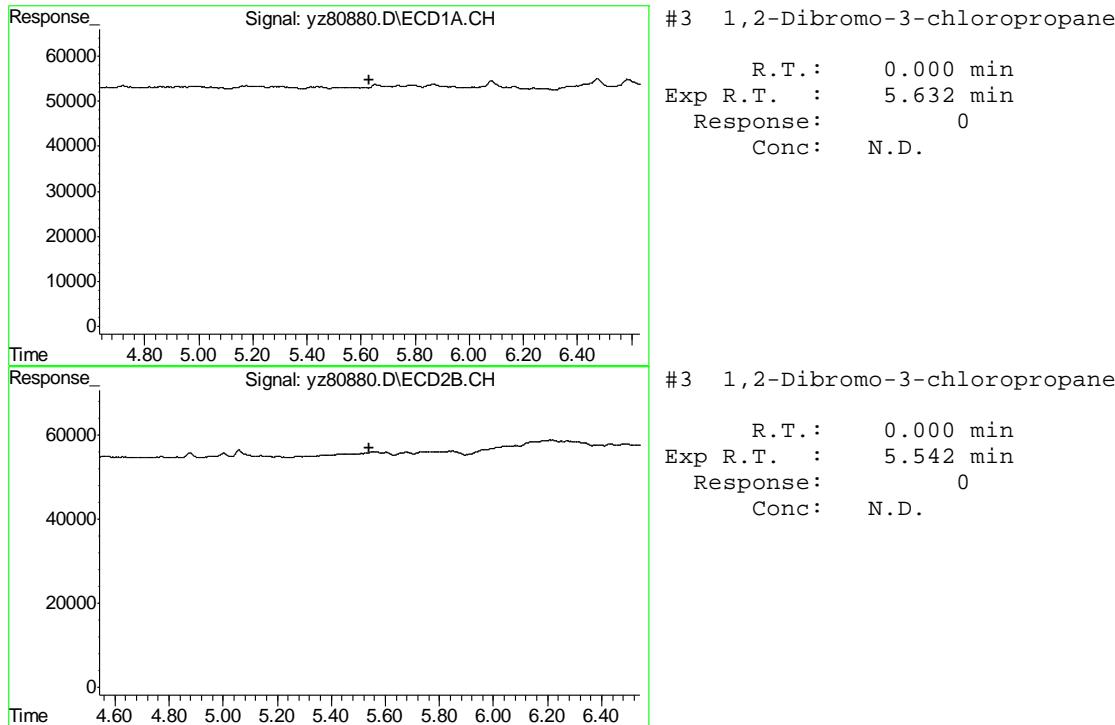
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 2.735 min
Response: 0
Conc: N.D.



#2 4-Bromofluorobenzene
R.T.: 3.806 min
Delta R.T.: 0.003 min
Response: 35305
Conc: 50.51 ug/L



#2 4-Bromofluorobenzene
R.T.: 4.006 min
Delta R.T.: 0.000 min
Response: 39461
Conc: 72.33 ug/L



12.1.1

12

Quantitation Report (QT Reviewed)

Data Path : T:\1\DATA\yz130530\
 Data File : yz80881.D
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
 Acq On : 30 May 2013 7:59 pm
 Operator : caobinz
 Sample : jb37868-2
 Misc : op33357,gyz7155,30.28,,,50,,soil
 ALS Vial : 11 Sample Multiplier: 1

Integration File signal 1: rteint.p
 Integration File signal 2: rteint2.p
 Quant Time: May 31 09:41:50 2013
 Quant Method : T:\1\METHODS\Es130330.M
 Quant Title : EDB /pest2/pest
 QLast Update : Thu May 30 15:02:08 2013
 Response via : Initial Calibration
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds
 2) s 4-Bromofl... 3.805 4.007 34488 38452 48.833 70.286 #
 Spiked Amount 50.000 Range 40 - 168 Recovery = 97.67% 140.57%

Target Compounds
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

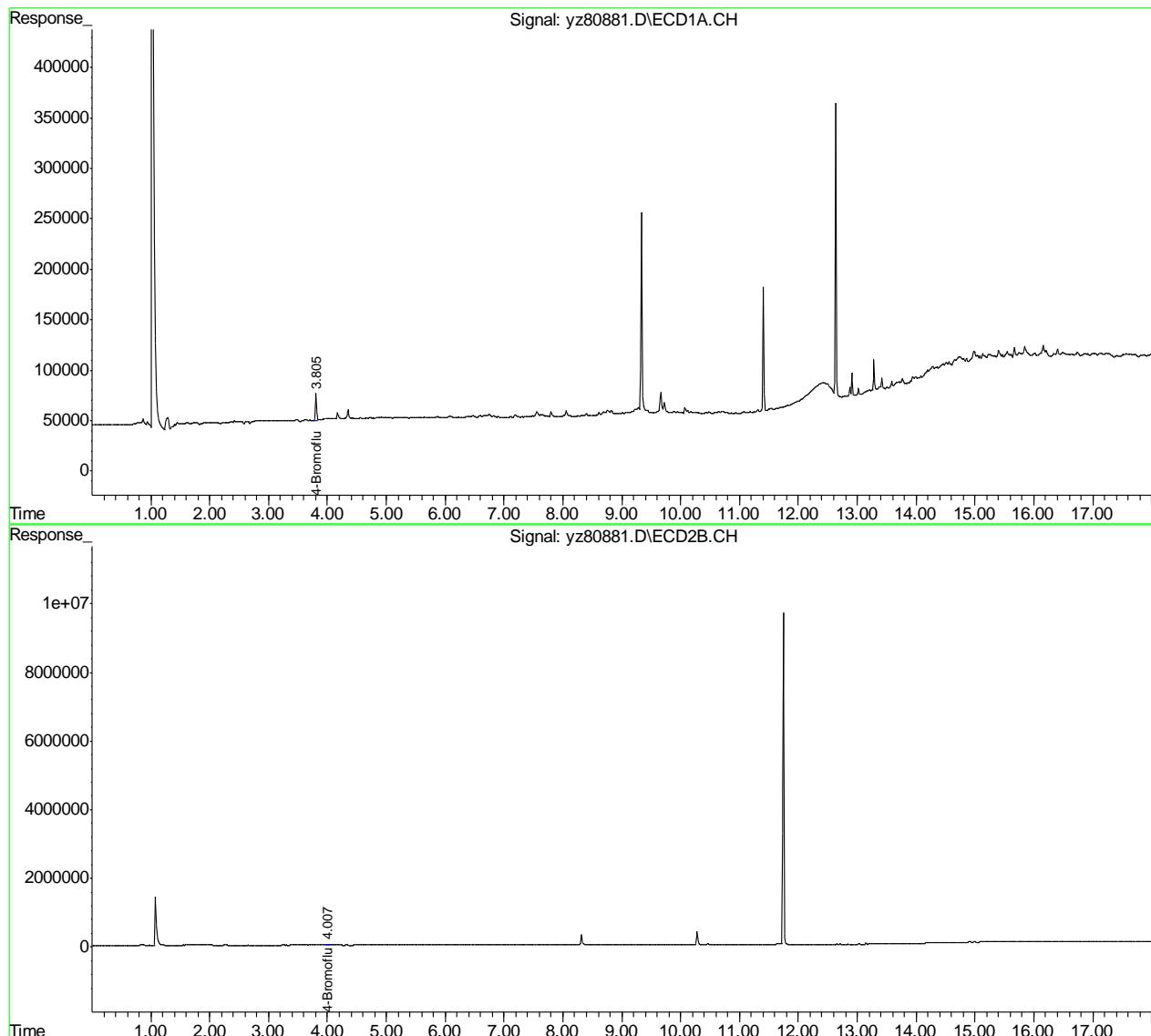
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

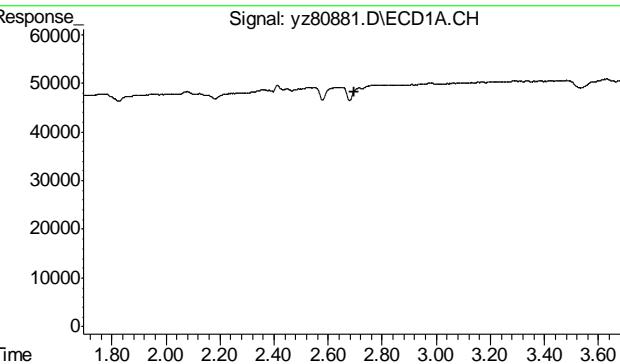
Quantitation Report (QT Reviewed)

Data Path : T:\1\DATA\yz130530\
 Data File : yz80881.D
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
 Acq On : 30 May 2013 7:59 pm
 Operator : caobinz
 Sample : jb37868-2
 Misc : op33357,gyz7155,30.28,,,50,,soil
 ALS Vial : 11 Sample Multiplier: 1

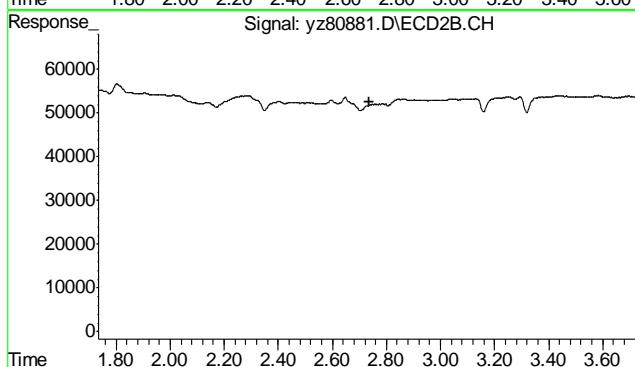
Integration File signal 1: rteint.p
 Integration File signal 2: rteint2.p
 Quant Time: May 31 09:41:50 2013
 Quant Method : T:\1\METHODS\Es130330.M
 Quant Title : EDB /pest2/pest
 QLast Update : Thu May 30 15:02:08 2013
 Response via : Initial Calibration
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

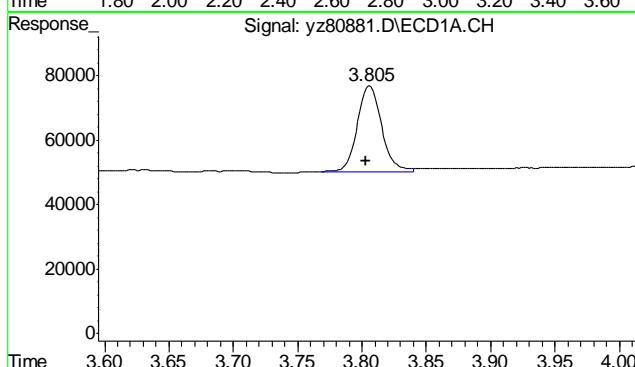




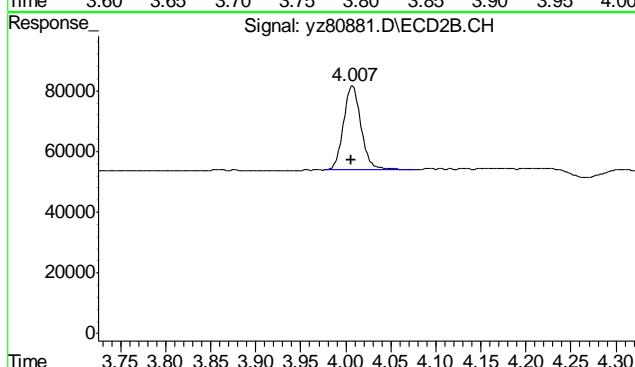
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 2.695 min
Response: 0
Conc: N.D.



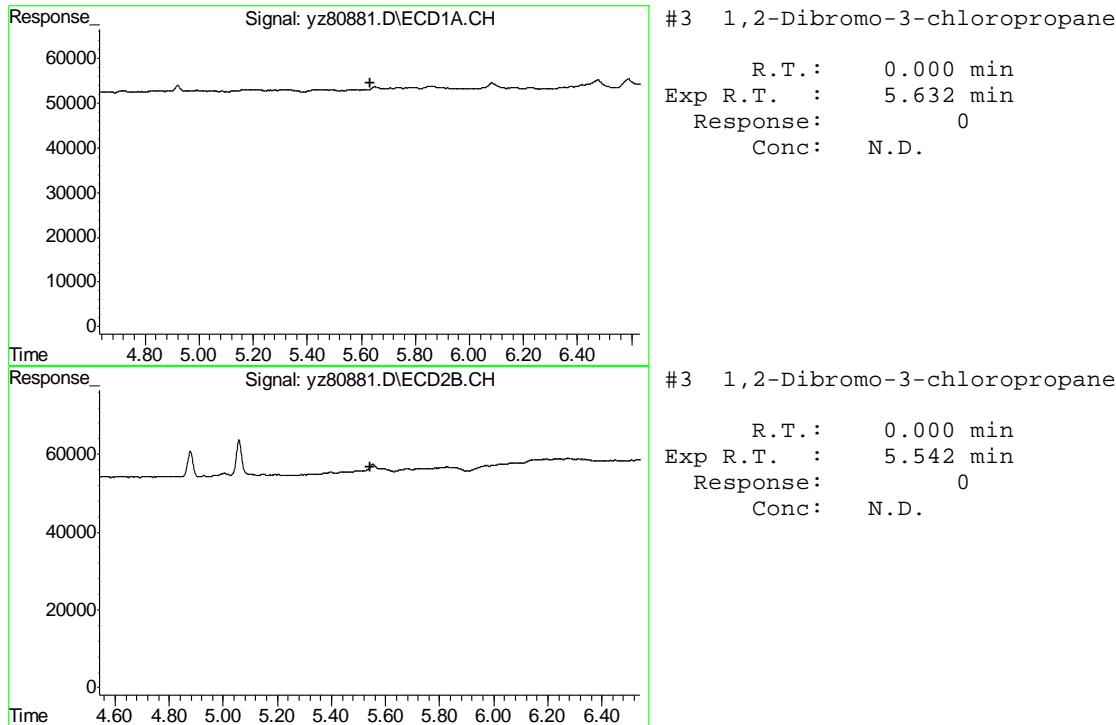
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 2.735 min
Response: 0
Conc: N.D.



#2 4-Bromofluorobenzene
R.T.: 3.805 min
Delta R.T.: 0.002 min
Response: 34488
Conc: 48.83 ug/L



#2 4-Bromofluorobenzene
R.T.: 4.007 min
Delta R.T.: 0.001 min
Response: 38452
Conc: 70.29 ug/L



12.1.2

12

Quantitation Report (QT Reviewed)

Data Path : T:\1\DATA\yz130530\
 Data File : yz80882.D
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
 Acq On : 30 May 2013 8:26 pm
 Operator : caobinz
 Sample : jb37868-3
 Misc : op33357,gyz7155,30.60,,,50,,soil
 ALS Vial : 12 Sample Multiplier: 1

Integration File signal 1: rteint.p
 Integration File signal 2: rteint2.p
 Quant Time: May 31 09:42:18 2013
 Quant Method : T:\1\METHODS\Es130330.M
 Quant Title : EDB /pest2/pest
 QLast Update : Thu May 30 15:02:08 2013
 Response via : Initial Calibration
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds
 2) s 4-Bromofl... 3.804 4.006 35593 39419 51.104 72.244 #
 Spiked Amount 50.000 Range 40 - 168 Recovery = 102.21% 144.49%

Target Compounds
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

12.1.3

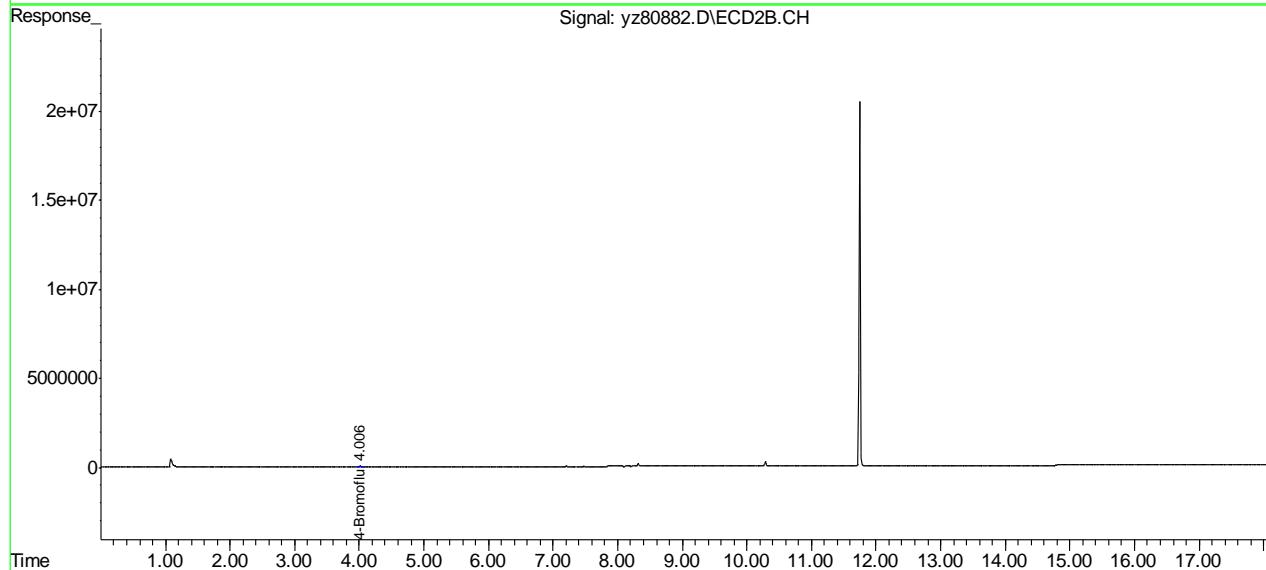
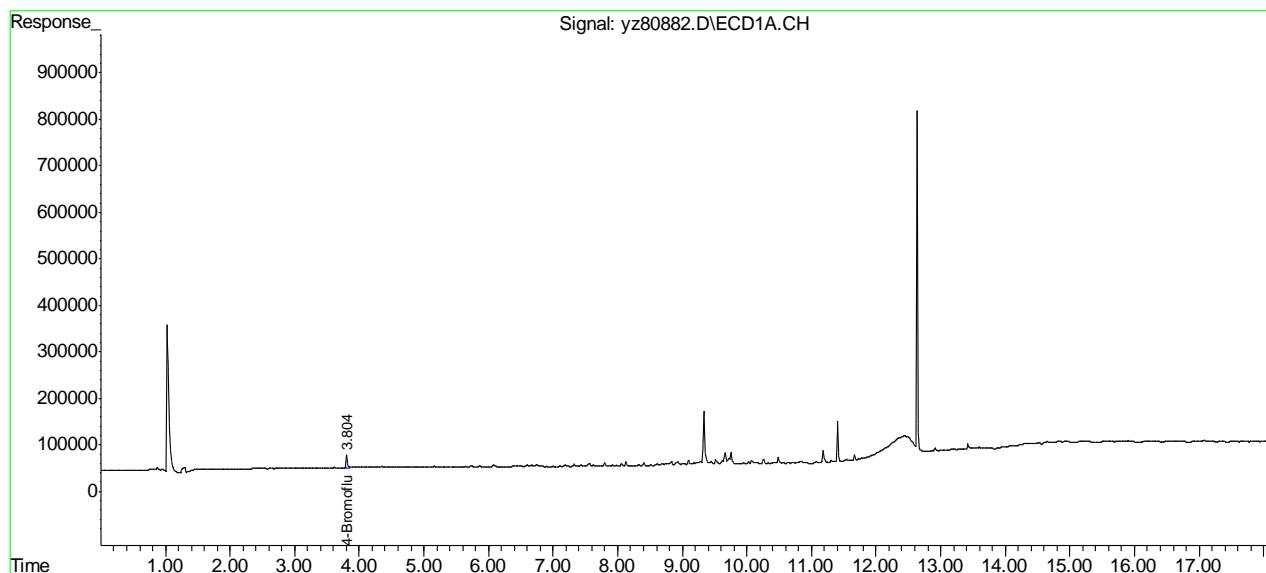
12

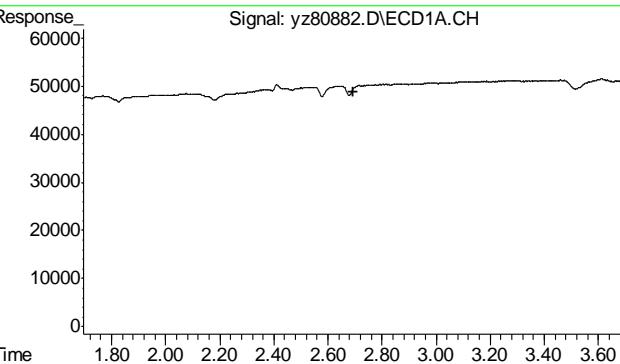
Quantitation Report (QT Reviewed)

Data Path : T:\1\DATA\yz130530\
 Data File : yz80882.D
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
 Acq On : 30 May 2013 8:26 pm
 Operator : caobinz
 Sample : jb37868-3
 Misc : op33357,gyz7155,30.60,,,50,,soil
 ALS Vial : 12 Sample Multiplier: 1

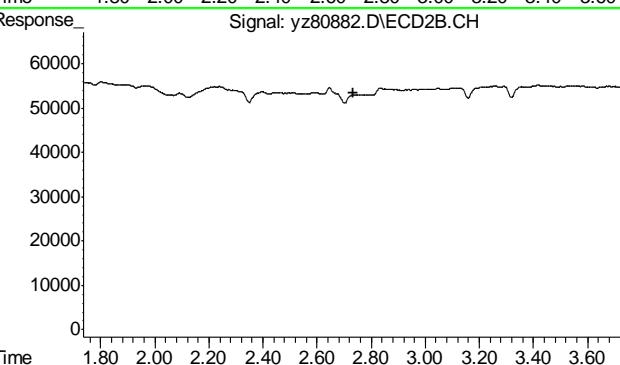
Integration File signal 1: rteint.p
 Integration File signal 2: rteint2.p
 Quant Time: May 31 09:42:18 2013
 Quant Method : T:\1\METHODS\Es130330.M
 Quant Title : EDB /pest2/pest
 QLast Update : Thu May 30 15:02:08 2013
 Response via : Initial Calibration
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

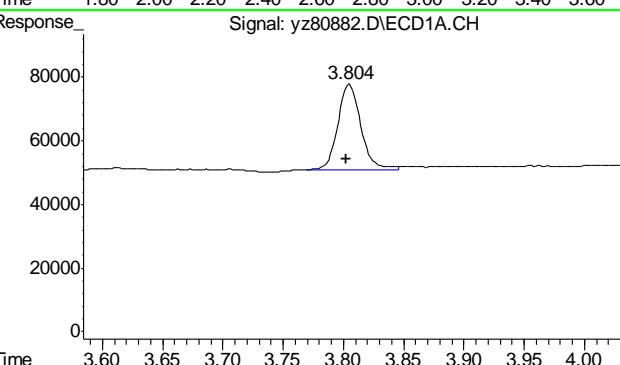




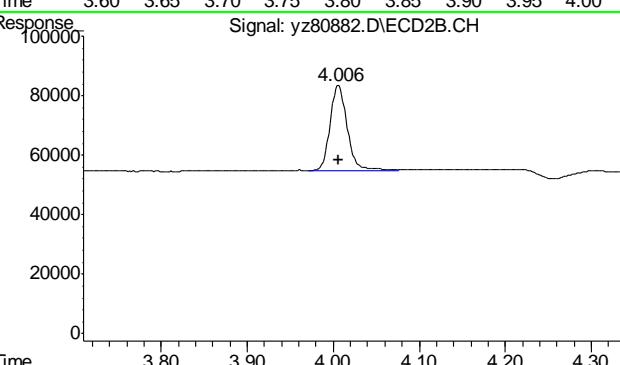
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 2.695 min
Response: 0
Conc: N.D.



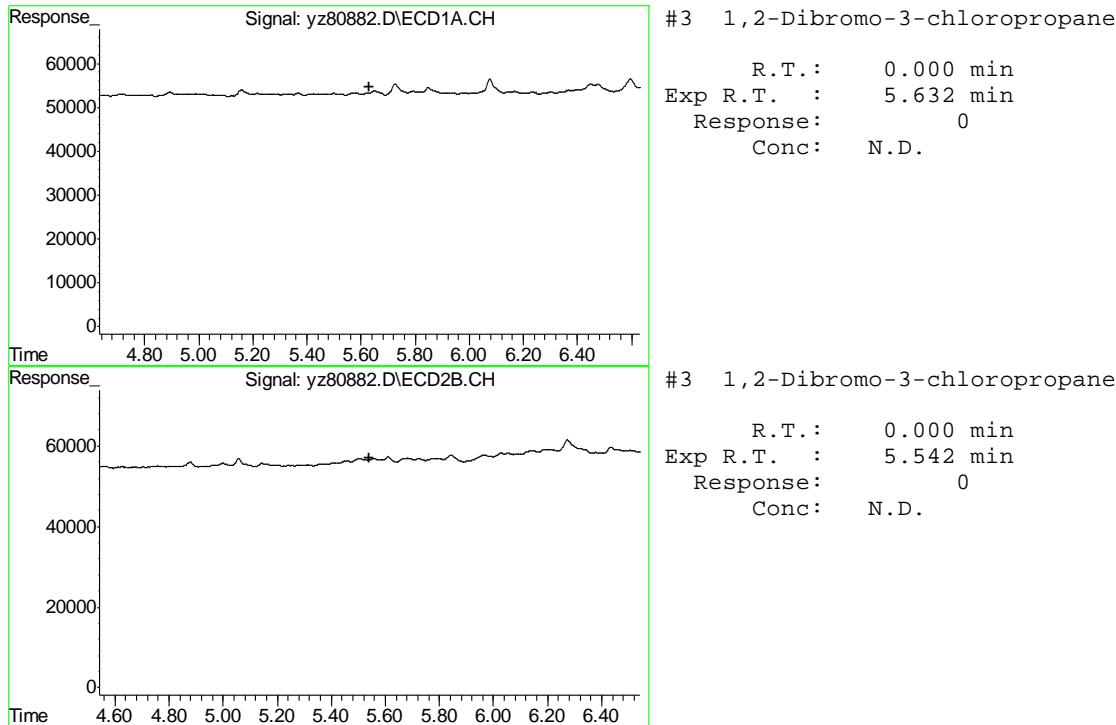
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 2.735 min
Response: 0
Conc: N.D.



#2 4-Bromofluorobenzene
R.T.: 3.804 min
Delta R.T.: 0.001 min
Response: 35593
Conc: 51.10 ug/L



#2 4-Bromofluorobenzene
R.T.: 4.006 min
Delta R.T.: 0.000 min
Response: 39419
Conc: 72.24 ug/L



12.1.3

12

Quantitation Report (QT Reviewed)

Manual Integrations
APPROVED
(compounds with "m" flag)

Andri Piluri
05/31/13 09:21

Data Path : C:\msdchem\1\DATA\yz130530\
Data File : yz80872.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 30 May 2013 3:33 pm
Operator : caobinz
Sample : op33357-mb
Misc : op33357,gyz7155,30.86,,,50,,soil
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: rteint.p
Integration File signal 2: rteint2.p
Quant Time: May 30 15:54:35 2013
Quant Method : C:\msdchem\1\METHODS\Es130330.M
Quant Title : EDB /pest2/pest
QLast Update : Thu May 30 15:02:08 2013
Response via : Initial Calibration
Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds
2) s 4-Bromofl... 3.806 4.008 34948 37459 49.777m 68.281m#
Spiked Amount 50.000 Range 40 - 168 Recovery = 99.55% 136.56%

Target Compounds
1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d
3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

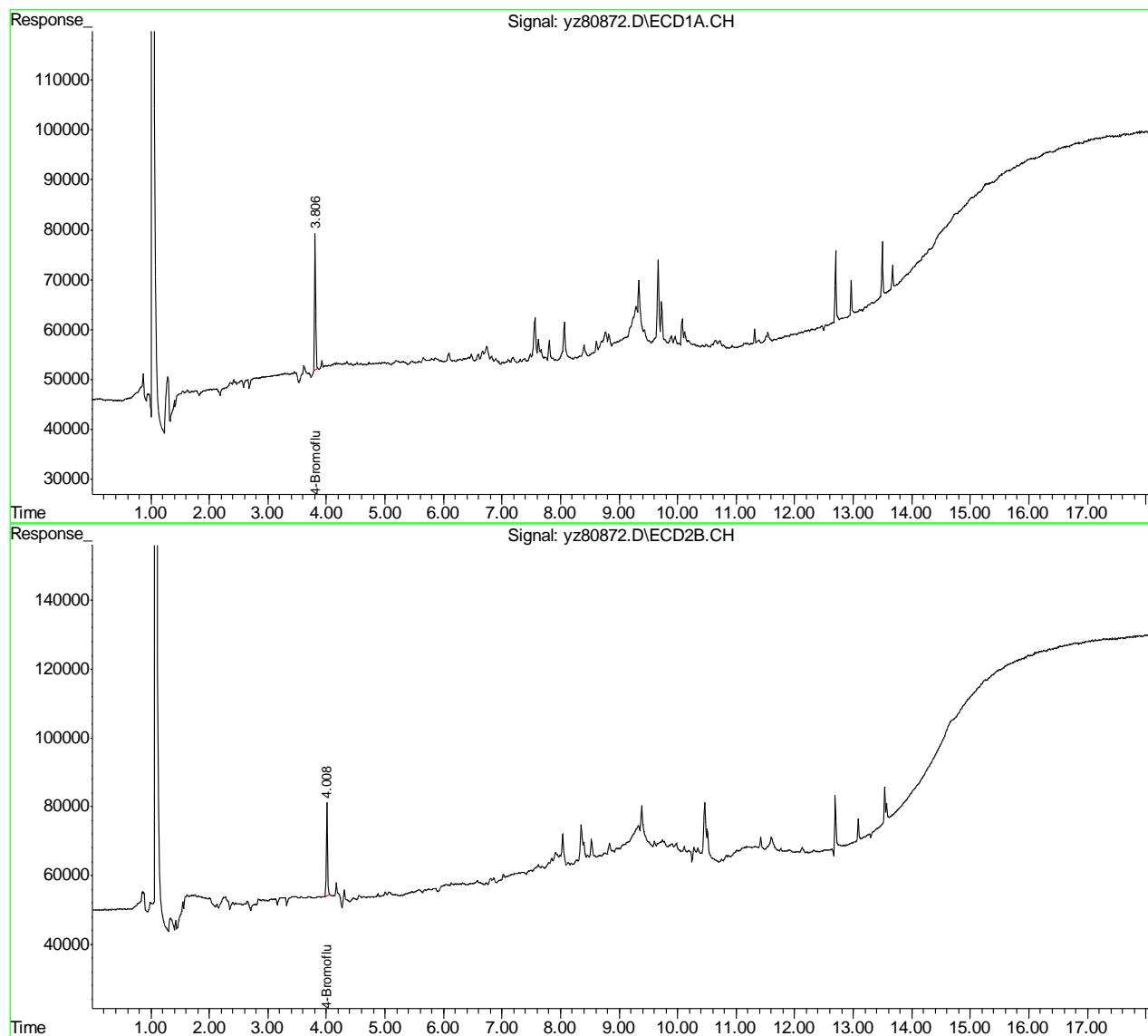
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

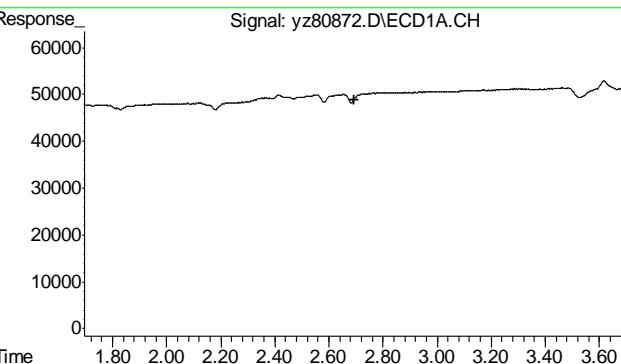
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\yz130530\
 Data File : yz80872.D
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
 Acq On : 30 May 2013 3:33 pm
 Operator : caobinz
 Sample : op33357-mb
 Misc : op33357,gyz7155,30.86,,,50,,soil
 ALS Vial : 1 Sample Multiplier: 1

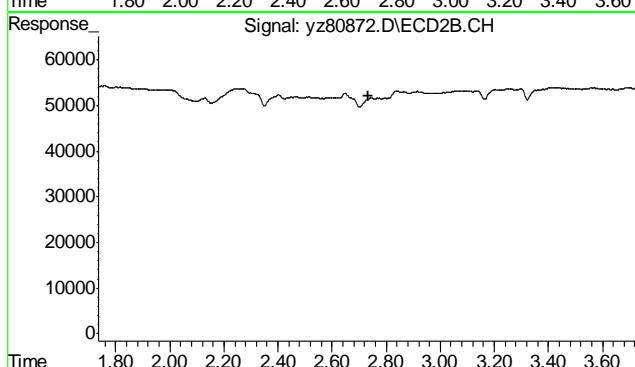
Integration File signal 1: rteint.p
 Integration File signal 2: rteint2.p
 Quant Time: May 30 15:54:35 2013
 Quant Method : C:\msdchem\1\METHODS\Es130330.M
 Quant Title : EDB /pest2/pest
 QLast Update : Thu May 30 15:02:08 2013
 Response via : Initial Calibration
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :
 Signal #1 Phase : Signal #2 Phase:
 Signal #1 Info : Signal #2 Info :

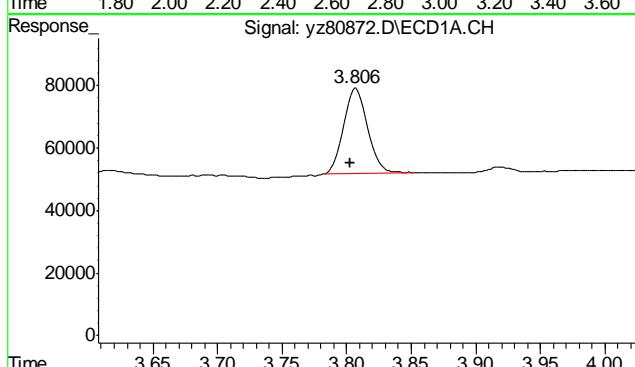




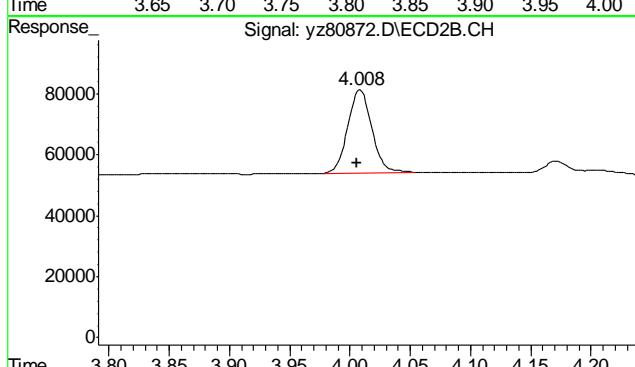
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 2.695 min
Response: 0
Conc: N.D.



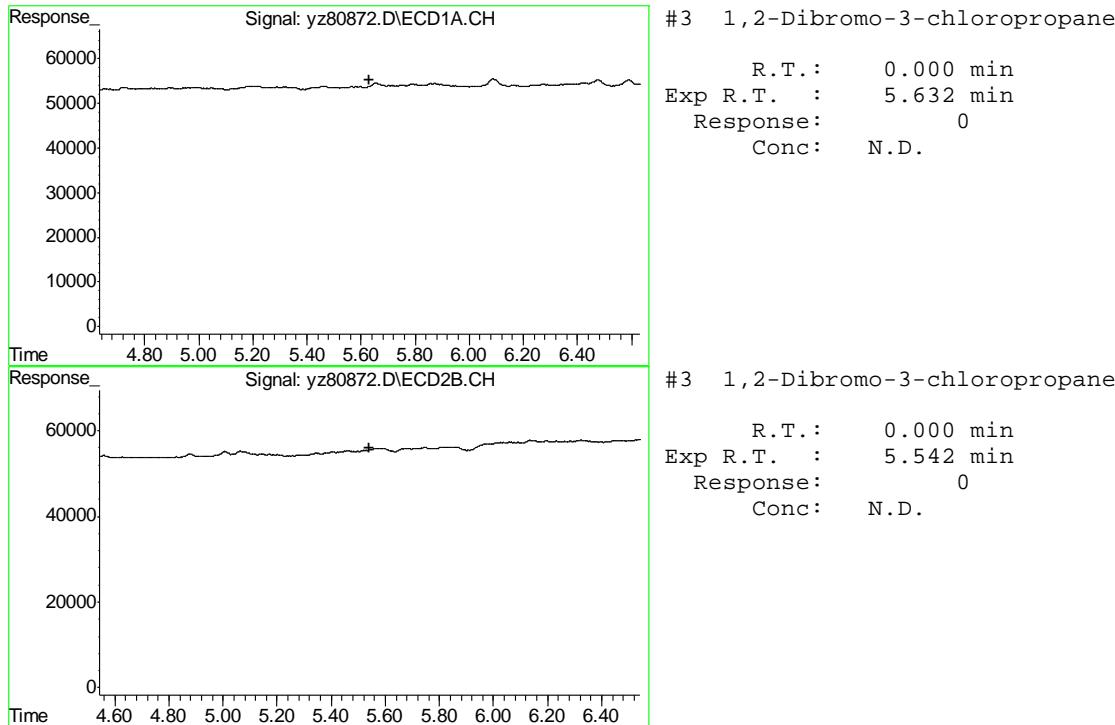
#1 1,2-Dibromoethane
R.T.: 0.000 min
Exp R.T.: 2.735 min
Response: 0
Conc: N.D.



#2 4-Bromofluorobenzene
R.T.: 3.806 min
Delta R.T.: 0.003 min
Response: 34948
Conc: 49.78 ug/L m



#2 4-Bromofluorobenzene
R.T.: 4.008 min
Delta R.T.: 0.002 min
Response: 37459
Conc: 68.28 ug/L m



12.2.1

12



Metals Analysis

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

Date Analyzed: 06/03/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15695

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
19:07	MA15695-STD1	1		STD1
19:11	MA15695-STD2	1		STD2
19:15	MA15695-STD3	1		STD3
19:20	MA15695-STD4	1		STD4
19:24	MA15695-ICV1	1		
19:28	MA15695-ICB1	1		
19:33	MA15695-CCV1	1		
19:37	MA15695-CCB1	1		
19:41	MA15695-CRIA1	1		
19:46	MA15695-ICSA1	1		
19:50	MA15695-ICSAB1	1		
19:55	MP21101-B1	1		
19:59	MP21101-MB1	1		
20:03	MP21101-S1	1		
20:08	MP21101-S2	1		
20:12	MC21341-13	1		(sample used for QC only; not part of login JB37868)
20:16	MP21101-SD1	5		
20:20	MP21101-B2	1		
20:25	MA15695-CCV2	1		
20:29	MA15695-CCB2	1		
20:33	MP21101-LC1	1		
20:38	ZZZZZ	1		
20:42	ZZZZZ	1		
20:46	ZZZZZ	1		
20:50	ZZZZZ	1		
20:55	ZZZZZ	1		
20:59	ZZZZZ	1		
21:03	ZZZZZ	1		
21:08	ZZZZZ	1		
21:12	ZZZZZ	1		
21:16	MA15695-CCV3	1		
21:21	MA15695-CCB3	1		
21:25	ZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

Date Analyzed: 06/03/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15695

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
21:29	ZZZZZZ	1		
21:34	ZZZZZZ	1		
21:38	ZZZZZZ	1		
21:42	ZZZZZZ	1		
21:46	ZZZZZZ	1		
21:51	ZZZZZZ	1		
21:55	ZZZZZZ	1		
21:59	ZZZZZZ	1		
22:04	ZZZZZZ	1		
22:08	MA15695-CCV4	1		
22:12	MA15695-CCB4	1		
22:17	MP21100-B1	1		
22:21	MP21100-MB1	1		
22:25	MP21100-S1	1		
22:30	MP21100-S2	1		
22:34	MC21111-1	1		(sample used for QC only; not part of login JB37868)
22:38	MP21100-SD1	5		
22:42	MP21100-B2	1		
22:47	MP21100-LC1	1		
22:51	JB37868-1	1		
22:55	JB37868-2	1		
23:00	MA15695-CCV5	1		
23:04	MA15695-CCB5	1		
23:08	JB37868-3	1		
-----> Last reportable sample/prep for job JB37868				
23:13	ZZZZZZ	1		
23:17	ZZZZZZ	1		
23:21	ZZZZZZ	1		
23:26	ZZZZZZ	1		
23:30	ZZZZZZ	1		
23:34	ZZZZZZ	1		
23:39	ZZZZZZ	1		
23:43	ZZZZZZ	1		
23:47	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

Date Analyzed: 06/03/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15695

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:52	MA15695-CCV6	1		
23:56	MA15695-CCB6	1		
00:01	ZZZZZZ	1		
00:05	ZZZZZZ	1		
00:09	ZZZZZZ	1		
00:14	ZZZZZZ	1		
00:18	ZZZZZZ	1		
00:22	ZZZZZZ	1		
00:27	ZZZZZZ	1		
00:31	MA15695-CCV7	1		
00:35	MA15695-CCB7	1		
00:40	MA15695-CRIA2	1		
00:44	MA15695-ICSA2	1		
00:49	MA15695-ICSAB2	1		
00:53	MA15695-CCV8	1		
00:57	MA15695-CCB8	1		

-----> Last reportable CCB for job JB37868

Refer to raw data for calibration curve and standards.

INTERNAL STANDARD SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

Date Analyzed: 06/03/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15695

Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
19:07	MA15695-STD1	2273 R	55224 R	13645 R
19:11	MA15695-STD2	2256	54218	13387
19:15	MA15695-STD3			13684
19:20	MA15695-STD4	2289	55078	13514
19:24	MA15695-ICV1	2260	54745	13564
19:28	MA15695-ICB1	2286	55304	13557
19:33	MA15695-CCV1	2272	54778	13484
19:37	MA15695-CCB1	2269	55256	13391
19:41	MA15695-CRIA1	2280	55267	13616
19:46	MA15695-ICSA1	2101	51749	13271
19:50	MA15695-ICSAB1	2082	51401	13261
19:55	MP21101-B1	2247	54855	13558
19:59	MP21101-MB1	2271	56736	13845
20:03	MP21101-S1	2345	56881	14159
20:08	MP21101-S2	2323	56604	14085
20:12	MC21341-13	2357	57080	14178
20:16	MP21101-SD1	2298	55501	13715
20:20	MP21101-B2	2254	54903	13601
20:25	MA15695-CCV2	2278	54861	13532
20:29	MA15695-CCB2	2267	55589	13666
20:33	MP21101-LC1	2432	59313	14842
20:38	ZZZZZZ	2488	59663	15029
20:42	ZZZZZZ	2387	57279	14284
20:46	ZZZZZZ	2414	58332	14339
20:50	ZZZZZZ	2369	57278	14077
20:55	ZZZZZZ	2367	57132	14412
20:59	ZZZZZZ	2397	58030	14390
21:03	ZZZZZZ	2354	57267	14371
21:08	ZZZZZZ	2399	57707	14627
21:12	ZZZZZZ	2397	58322	14557
21:16	MA15695-CCV3	2260	54762	13656
21:21	MA15695-CCB3	2254	55427	13597
21:25	ZZZZZZ	2391	58360	14409

INTERNAL STANDARD SUMMARY

Login Number: JB37868
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP Date Analyzed: 06/03/13 Methods: SW846 6010C
 Analyst: EAL Run ID: MA15695
 Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
21:29	ZZZZZZ	2365	57774	14374
21:34	ZZZZZZ	2373	57883	14502
21:38	ZZZZZZ	2370	58058	14592
21:42	ZZZZZZ	2388	58198	14664
21:46	ZZZZZZ	2393	58584	14543
21:51	ZZZZZZ	2349	57665	14238
21:55	ZZZZZZ	2388	58399	14657
21:59	ZZZZZZ	2370	57775	14259
22:04	ZZZZZZ	2352	57380	13960
22:08	MA15695-CCV4	2286	55036	13539
22:12	MA15695-CCB4	2289	55756	13435
22:17	MP21100-B1	2273	54347	13515
22:21	MP21100-MB1	2303	55826	13598
22:25	MP21100-S1	2348	56573	14048
22:30	MP21100-S2	2356	56449	14021
22:34	MC21111-1	2389	56952	14051
22:38	MP21100-SD1	2334	55867	13627
22:42	MP21100-B2	2270	55108	13532
22:47	MP21100-LC1	2482	59853	14838
22:51	JB37868-1	2592	61952	15298
22:55	JB37868-2	2467	60729	14952
23:00	MA15695-CCV5	2304	55275	13392
23:04	MA15695-CCB5	2299	55250	13282
23:08	JB37868-3	2406	57400	14220
23:13	ZZZZZZ	2467	58244	14437
23:17	ZZZZZZ	2422	57560	14308
23:21	ZZZZZZ	2520	60678	15179
23:26	ZZZZZZ	2413	57851	14357
23:30	ZZZZZZ	2453	60363	14690
23:34	ZZZZZZ	2398	58693	14492
23:39	ZZZZZZ	2534	61748	15243
23:43	ZZZZZZ	2467	59027	14655
23:47	ZZZZZZ	2373	57842	14185

INTERNAL STANDARD SUMMARY

Login Number: JB37868
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP Date Analyzed: 06/03/13 Methods: SW846 6010C
 Analyst: EAL Run ID: MA15695
 Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
23:52	MA15695-CCV6	2296	55392	13528
23:56	MA15695-CCB6	2304	55606	13335
00:01	ZZZZZZ	2412	58176	13966
00:05	ZZZZZZ	2329	57287	13848
00:09	ZZZZZZ	2479	59068	14455
00:14	ZZZZZZ	2469	58703	14139
00:18	ZZZZZZ	2482	58824	14444
00:22	ZZZZZZ	2475	59100	14451
00:27	ZZZZZZ	2603	61736	14989
00:31	MA15695-CCV7	2324	55487	13296
00:35	MA15695-CCB7	2343	56523	13305
00:40	MA15695-CRIA2	2334	55970	13394
00:44	MA15695-ICSA2	2142	51997	13121
00:49	MA15695-ICSAB2	2131	52021	13062
00:53	MA15695-CCV8	2332	55513	13389
00:57	MA15695-CCB8	2319	55468	13408

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37868
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP Date Analyzed: 06/03/13 Methods: SW846 6010C
QC Limits: result < RL Run ID: MA15695 Units: ug/l

Metal	Time: Sample ID: RL	19:28 ICB1		19:37 CCB1		20:29 CCB2		21:21 CCB3	
		raw	final	raw	final	raw	final	raw	final
Aluminum	200	12							
Antimony	10	1.1							
Arsenic	10	1.7	anr						
Barium	50	.32	anr						
Beryllium	4.0	.1							
Boron	100	1.1	anr						
Cadmium	4.0	.25	anr						
Calcium	5000	21							
Chromium	10	.48	anr						
Cobalt	50	.29							
Copper	25	.93	anr						
Gold	50	1.5							
Iron	100	3.5							
Lead	10	1.2	0.90	<10	0.40	<10	-0.30	<10	-0.10
Magnesium	5000	30							
Manganese	15	.16							
Molybdenum	100	.31							
Nickel	40	.45	anr						
Palladium	50	2.2							
Platinum	50	6.4							
Potassium	5000	54							
Selenium	10	1.7	anr						
Silicon	100	2							
Silver	5.0	.81	anr						
Sodium	5000	16							
Strontium	10	.12							
Thallium	10	1.2							
Tin	100	.87							
Titanium	50	.66	anr						
Tungsten	100	9.3							
Vanadium	10	.82							
Zinc	20	.45	anr						
Zirconium	50	.45							

(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP
QC Limits: result < RL

Date Analyzed: 06/03/13
Run ID: MA15695

Methods: SW846 6010C
Units: ug/l

Time:	
Sample ID:	
Metal	

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37868
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP Date Analyzed: 06/03/13 Methods: SW846 6010C
QC Limits: result < RL Run ID: MA15695 Units: ug/l

Metal	Time: Sample ID: RL	IDL	22:12 CCB4		23:04 CCB5		23:56 CCB6		00:35 CCB7	
			raw	final	raw	final	raw	final	raw	final
Aluminum	200	12								
Antimony	10	1.1								
Arsenic	10	1.7	anr							
Barium	50	.32	anr							
Beryllium	4.0	.1								
Boron	100	1.1	anr							
Cadmium	4.0	.25	anr							
Calcium	5000	21								
Chromium	10	.48	anr							
Cobalt	50	.29								
Copper	25	.93	anr							
Gold	50	1.5								
Iron	100	3.5								
Lead	10	1.2	0.80	<10	0.20	<10	0.80	<10	0.40	<10
Magnesium	5000	30								
Manganese	15	.16								
Molybdenum	100	.31								
Nickel	40	.45	anr							
Palladium	50	2.2								
Platinum	50	6.4								
Potassium	5000	54								
Selenium	10	1.7	anr							
Silicon	100	2								
Silver	5.0	.81	anr							
Sodium	5000	16								
Strontium	10	.12								
Thallium	10	1.2								
Tin	100	.87								
Titanium	50	.66	anr							
Tungsten	100	9.3								
Vanadium	10	.82								
Zinc	20	.45	anr							
Zirconium	50	.45								

(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP
QC Limits: result < RL

Date Analyzed: 06/03/13
Run ID: MA15695

Methods: SW846 6010C
Units: ug/l

Time:	
Sample ID:	
Metal	

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37868
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP Date Analyzed: 06/03/13 Methods: SW846 6010C
QC Limits: result < RL Run ID: MA15695 Units: ug/l

Metal	Time:	Sample ID: 00:57 CCB8		final
	RL	IDL	raw	
Aluminum	200	12		
Antimony	10	1.1		
Arsenic	10	1.7	anr	
Barium	50	.32	anr	
Beryllium	4.0	.1		
Boron	100	1.1	anr	
Cadmium	4.0	.25	anr	
Calcium	5000	21		
Chromium	10	.48	anr	
Cobalt	50	.29		
Copper	25	.93	anr	
Gold	50	1.5		
Iron	100	3.5		
Lead	10	1.2	0.80	<10
Magnesium	5000	30		
Manganese	15	.16		
Molybdenum	100	.31		
Nickel	40	.45	anr	
Palladium	50	2.2		
Platinum	50	6.4		
Potassium	5000	54		
Selenium	10	1.7	anr	
Silicon	100	2		
Silver	5.0	.81	anr	
Sodium	5000	16		
Strontium	10	.12		
Thallium	10	1.2		
Tin	100	.87		
Titanium	50	.66	anr	
Tungsten	100	9.3		
Vanadium	10	.82		
Zinc	20	.45	anr	
Zirconium	50	.45		

(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP
QC Limits: result < RL

Date Analyzed: 06/03/13
Run ID: MA15695

Methods: SW846 6010C
Units: ug/l

Time:	
Sample ID:	
Metal	

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37868
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP Date Analyzed: 06/03/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15695 Units: ug/l

Time:	19:24	19:33	20:25	
Sample ID:	ICV	CCV	CCV	
Metal	True	Results % Rec	True	Results % Rec

Aluminum									
Antimony									
Arsenic	anr								
Barium	anr								
Beryllium									
Boron	anr								
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt									
Copper	anr								
Gold									
Iron									
Lead	3000	2950	98.3	2000	1940	97.0	2000	1950	97.5
Magnesium									
Manganese									
Molybdenum									
Nickel	anr								
Palladium									
Platinum									
Potassium									
Selenium	anr								
Silicon									
Silver	anr								
Sodium									
Strontium									
Thallium									
Tin									
Titanium	anr								
Tungsten									
Vanadium									
Zinc	anr								
Zirconium									

(*) Outside of QC limits

13.1.3
13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/03/13

Run ID: MA15695

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3
13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37868
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP Date Analyzed: 06/03/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15695 Units: ug/l

Time:	21:16	CCV	Results	% Rec	Time:	22:08	CCV	Results	% Rec	Time:	23:00	CCV	Results	% Rec
Metal	True	CCV3	True	CCV4	True	CCV5	True							

Aluminum														
Antimony														
Arsenic	anr													
Barium	anr													
Beryllium														
Boron	anr													
Cadmium	anr													
Calcium														
Chromium	anr													
Cobalt														
Copper	anr													
Gold														
Iron														
Lead	2000	1960	98.0		2000	1930	96.5		2000	1930	96.5			
Magnesium														
Manganese														
Molybdenum														
Nickel	anr													
Palladium														
Platinum														
Potassium														
Selenium	anr													
Silicon														
Silver	anr													
Sodium														
Strontium														
Thallium														
Tin														
Titanium	anr													
Tungsten														
Vanadium														
Zinc	anr													
Zirconium														

(*) Outside of QC limits

13.1.3
13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/03/13

Run ID: MA15695

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3
13

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37868
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP Date Analyzed: 06/03/13 Methods: SW846 6010C
QC Limits: 90 to 110 % Recovery Run ID: MA15695 Units: ug/l

Time:	23:52	00:31	00:53
Sample ID:	CCV CCV6	CCV CCV7	CCV CCV8
Metal	True Results % Rec	True Results % Rec	True Results % Rec

Aluminum									
Antimony									
Arsenic	anr								
Barium	anr								
Beryllium									
Boron	anr								
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt									
Copper	anr								
Gold									
Iron									
Lead	2000	1930	96.5	2000	1920	96.0	2000	1940	97.0
Magnesium									
Manganese									
Molybdenum									
Nickel	anr								
Palladium									
Platinum									
Potassium									
Selenium	anr								
Silicon									
Silver	anr								
Sodium									
Strontium									
Thallium									
Tin									
Titanium	anr								
Tungsten									
Vanadium									
Zinc	anr								
Zirconium									

(*) Outside of QC limits

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/03/13

Run ID: MA15695

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3
13

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

QC Limits: CRI 70-130% CRIA 70-130%

Date Analyzed: 06/03/13

Methods: SW846 6010C

Run ID: MA15695

Units: ug/l

Metal	Time:		19:41		00:40		
	Sample ID:	CRI	CRIA	Results	% Rec	Results	% Rec
Aluminum	200	200					
Antimony	6.0	10					
Arsenic	4.0	10	anr				
Barium	50	50	anr				
Beryllium	4.0	4.0					
Boron	100	100	anr				
Cadmium	4.0	4.0	anr				
Calcium	5000	5000					
Chromium	10	10	anr				
Cobalt	50	50					
Copper	25	25	anr				
Gold	50	50					
Iron	100	100					
Lead	5.0	10	10.1	101.0	9.9	99.0	
Magnesium	5000	5000					
Manganese	15	15					
Molybdenum	100	100					
Nickel	40	40	anr				
Palladium	50	50					
Platinum	50	50					
Potassium	5000	5000					
Selenium	10	10	anr				
Silicon	100	100					
Silver	5.0	5.0	anr				
Sodium	5000	5000					
Strontium	10	10					
Thallium	5.0	10					
Tin	100	100					
Titanium	50	50	anr				
Tungsten	100	100					
Vanadium	10	10					
Zinc	20	20	anr				
Zirconium	50	50					

(*) Outside of QC limits

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

Date Analyzed: 06/03/13

Methods: SW846 6010C

QC Limits: CRI 70-130% CRIA 70-130%

Run ID: MA15695

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB37868
 Account: ALNJ - Accutest New Jersey
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP Date Analyzed: 06/03/13 Methods: SW846 6010C
 QC Limits: 80 to 120 % Recovery Run ID: MA15695 Units: ug/l

Metal	Time:		19:46		19:50		00:44		00:49	
	Sample ID:	ICSA	ICSA	ICSA1 Results	% Rec	ICSA1 Results	% Rec	ICSA2 Results	% Rec	ICSA2 Results
Aluminum	500000	500000	521000	104.2	512000	102.4	504000	100.8	503000	100.6
Antimony	2000	0.20			2070	103.5	0.30		2010	100.5
Arsenic	2000	3.0			2060	103.0	0.60		2020	101.0
Barium	500	-0.30			507	101.4	-0.20		508	101.6
Beryllium	500	0.20			472	94.4	0.10		475	95.0
Boron	1000	6.3			1020	102.0	5.9		992	99.2
Cadmium	1000	-0.30			1030	103.0	-0.30		1010	101.0
Calcium	500000	500000	464000	92.8	464000	92.8	464000	92.8	462000	92.4
Chromium	500	-0.10			485	97.0	-0.30		483	96.6
Cobalt	500	-0.50			483	96.6	-0.10		474	94.8
Copper	500	2.1			510	102.0	0.80		509	101.8
Gold	500	6.3			498	99.6	9.2		500	100.0
Iron	200000	200000	189000	94.5	189000	94.5	185000	92.5	183000	91.5
Lead	1000	-1.7			908	90.8	-0.50		898	89.8
Magnesium	500000	500000	494000	98.8	491000	98.2	502000	100.4	505000	101.0
Manganese	500	0.50			486	97.2	0.70		487	97.4
Molybdenum	1000	-0.30			969	96.9	-0.30		943	94.3
Nickel	1000	-0.90			894	89.4	-0.80		873	87.3
Palladium	500	-34			500	100.0	-30		479	95.8
Platinum	500	-22			481	96.2	-24		456	91.2
Potassium		41.0			60.0		160		227	
Selenium	2000	-2.9			1980	99.0	-4.1		1940	97.0
Silicon	2000	38.1			2210	110.5	36.5		2150	107.5
Silver	1000	0.40			1040	104.0	0.40		1040	104.0
Sodium		77.0			88.5		62.4		84.6	
Strontium	1000	0.90			979	97.9	0.90		972	97.2
Thallium	2000	-1.1			1900	95.0	0.20		1860	93.0
Tin	1000	-0.80			980	98.0	-0.30		943	94.3
Titanium	500	9.6			516	103.2	9.2		507	101.4
Tungsten	2000	-42			1850	92.5	-47		1870	93.5
Vanadium	500	-1.1			511	102.2	-1.2		511	102.2
Zinc	1000	-0.80			909	90.9	-0.70		909	90.9
Zirconium	500	0.50			458	91.6	0.50		435	87.0

(*) Outside of QC limits

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060313M2.ICP

Date Analyzed: 06/03/13

Methods: SW846 6010C

QC Limits: 80 to 120 % Recovery

Run ID: MA15695

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB37868
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

06/03/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	20	1.2	3.6		
Antimony	1.0	.11	.15		
Arsenic	1.0	.17	.21		
Barium	5.0	.032	.073		
Beryllium	0.40	.01	.024		
Boron	10	.11	.11		
Cadmium	0.40	.025	.042		
Calcium	500	2.1	6.3		
Chromium	1.0	.048	.095		
Cobalt	5.0	.029	.047		
Copper	2.5	.093	.56		
Gold	5.0	.15	.43		
Iron	10	.35	.87		
Lead	1.0	.12	.17	0.14	<1.0
Magnesium	500	3	5.1		
Manganese	1.5	.016	.04		
Molybdenum	10	.031	.07		
Nickel	4.0	.045	.044		
Palladium	5.0	.22	.64		
Platinum	5.0	.64	1.5		
Potassium	500	5.4	8.6		
Selenium	1.0	.17	.35		
Silicon	10	.2	3.3		
Silver	0.50	.081	.13		
Sodium	500	1.6	3.3		
Strontium	1.0	.012	.03		
Thallium	1.0	.12	.13		
Tin	10	.087	.14		
Titanium	5.0	.066	.14		
Tungsten	10	.93	.94		
Vanadium	1.0	.082	.13		
Zinc	2.0	.045	.16		
Zirconium	5.0	.045	.088		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JB37868
Account: ALNJ - Accutest New Jersey
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Associated samples MP21100: JB37868-1, JB37868-2, JB37868-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLIDMethods: SW846 6010C
Units: mg/kg

Prep Date:

06/03/13

Metal	MC21111-1 Original MS	Spikelot MPICP	% Rec	QC Limits
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Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Calcium

Chromium

Cobalt

Copper

Gold

Iron

Lead 5.2 99.7 102 93.0 75-125

Magnesium

Manganese

Molybdenum

Nickel

Palladium

Platinum

Potassium

Selenium

Silicon

Silver

Sodium

Strontium

Thallium

Tin

Titanium

Tungsten

Vanadium

Zinc

Zirconium

13.2.2

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Associated samples MP21100: JB37868-1, JB37868-2, JB37868-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

13.2.2

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLIDMethods: SW846 6010C
Units: mg/kg

Prep Date:

06/03/13

Metal	MC21111-1 Original MSD	Spikelot MPICP	MSD % Rec	RPD	QC Limit
-------	---------------------------	-------------------	--------------	-----	-------------

Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Calcium

Chromium

Cobalt

Copper

Gold

Iron

Lead

5.2

99.5

102

92.0

0.2

20

Magnesium

Manganese

Molybdenum

Nickel

Palladium

Platinum

Potassium

Selenium

Silicon

Silver

Sodium

Strontium

Thallium

Tin

Titanium

Tungsten

Vanadium

Zinc

Zirconium

13.2.2

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Associated samples MP21100: JB37868-1, JB37868-2, JB37868-3

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

13.2.2

13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLIDMethods: SW846 6010C
Units: mg/kg

Prep Date:

06/03/13

06/03/13

Metal	BSP Result	Spikelot MPICP	QC % Rec	BSD Limits	BSD Result	Spikelot MPICP	BSD % Rec	QC RPD	QC Limit
Aluminum									
Antimony									
Arsenic									
Barium									
Beryllium									
Boron									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Gold									
Iron									
Lead	95.7	100	95.7	80-120	96.5	100	96.5	0.8	20
Magnesium									
Manganese									
Molybdenum									
Nickel									
Palladium									
Platinum									
Potassium									
Selenium									
Silicon									
Silver									
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Tungsten									
Vanadium									
Zinc									
Zirconium									

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Associated samples MP21100: JB37868-1, JB37868-2, JB37868-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

13.2.3

13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLIDMethods: SW846 6010C
Units: mg/kg

Prep Date: 06/03/13

Metal	LCS Result	Spikelot MPLCS78	QC % Rec	Limits
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Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Calcium

Chromium

Cobalt

Copper

Gold

Iron

Lead 80.2 91.7 87.5 82-118

Magnesium

Manganese

Molybdenum

Nickel

Palladium

Platinum

Potassium

Selenium

Silicon

Silver

Sodium

Strontium

Thallium

Tin

Titanium

Tungsten

Vanadium

Zinc

Zirconium

13.2.3

13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

Associated samples MP21100: JB37868-1, JB37868-2, JB37868-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

13.2.3

13

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLIDMethods: SW846 6010C
Units: ug/l

Prep Date:

06/03/13

Metal	MC21111-1 Original	SDL 1:5	%DIF	QC Limits
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Aluminum

Antimony

Arsenic

Barium

Beryllium

Boron

Cadmium

Calcium

Chromium

Cobalt

Copper

Gold

Iron

Lead 50.9 51.7 1.6 0-10

Magnesium

Manganese

Molybdenum

Nickel

Palladium

Platinum

Potassium

Selenium

Silicon

Silver

Sodium

Strontium

Thallium

Tin

Titanium

Tungsten

Vanadium

Zinc

Zirconium

13.2.4
13

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB37868

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21100
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

Associated samples MP21100: JB37868-1, JB37868-2, JB37868-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

13.2.4

13



General Chemistry

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Page 1 of 1

Job Number: JB37868

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: JB37868-1 Analyzed: 01-JUN-13 by BF Method: SM21 2540 B MOD.
ClientID: 1 AOI-5_MW-458_4-6'_52313

Wet Weight (Total)	37.841	g
Tare Weight	29.091	g
Dry Weight (Total)	35.936	g
Solids, Percent	78.2	%

Sample: JB37868-2 Analyzed: 01-JUN-13 by BF Method: SM21 2540 B MOD.
ClientID: 2 AOI-5_MW-455_1-2'_52313

Wet Weight (Total)	30.015	g
Tare Weight	21.283	g
Dry Weight (Total)	28.154	g
Solids, Percent	78.7	%

Sample: JB37868-3 Analyzed: 01-JUN-13 by BF Method: SM21 2540 B MOD.
ClientID: 3 AOI-5_MW-455_10-11_052313

Wet Weight (Total)	40.293	g
Tare Weight	30.767	g
Dry Weight (Total)	38.894	g
Solids, Percent	85.3	%



General Chemistry

QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

Percent Solids Raw Data Summary

Page 1 of 1

Job Number: JB37868

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: JB37868-1 Analyzed: 01-JUN-13 by AMA
ClientID: 1 AOI-5_MW-458_4-6'_52313

Method: SM21 2540 B MOD.

Wet Weight (Total)	37.841	g
Tare Weight	29.091	g
Dry Weight (Total)	35.936	g
Solids, Percent	78.2	%

Sample: JB37868-2 Analyzed: 01-JUN-13 by AMA
ClientID: 2 AOI-5_MW-455_1-2'_52313

Method: SM21 2540 B MOD.

Wet Weight (Total)	30.015	g
Tare Weight	21.283	g
Dry Weight (Total)	28.154	g
Solids, Percent	78.7	%

Sample: JB37868-3 Analyzed: 01-JUN-13 by AMA
ClientID: 3 AOI-5_MW-455_10-11_052313

Method: SM21 2540 B MOD.

Wet Weight (Total)	40.293	g
Tare Weight	30.767	g
Dry Weight (Total)	38.894	g
Solids, Percent	85.3	%
